فرغانی، احمد

ابوالعباس احمدبن محمدبن کثیر فرغانی، مشهور به «ابن‌کثیر» و ملقب به «جاسب»، ستاره‌شناس معروف سدهٔ سوم و چهارم هجری قمری است.

نسبش به شهر فرغانه، شهری در فرارودان، می‌رسد. تاریخ تولد او را نمی‌دانیم. در منابع آمده که در حدود ۲۴۷ق تحصیلات ابتدایی خود را در زادگاهش گذراند. پس از آن، برای ادامه و تکمیل تحصیلات خود به بغداد رفت و همان‌جا در نجوم به مقام علمی بالایی رسید. از استادان وی در بغداد هیچ اطلاعی نداریم. شهرت و اعتبار علمی فرغانی چنان بود که در دربار مأمون، معتصم، واثق و متوکل عباسی سمت منجّمی را به‌دست آورد (روزنفلد، ص ۳۲).

دوران اوج فعالیت‌های علمی فرغانی در دورهٔ این خلفای عباسی است. فرغانی در دورهٔ مأمون برای محاسبهٔ طول یک درجه قوس نصف‌النهار با منجمان دیگر همکاری داشت. در همین دوره در تصحیح زیج بطلمیوس نیز شرکت کرد. از دیگر کارهای او در دورهٔ متوکل، این است که آن خلیفه بنوموسی را مأمور کرد تا آبراههٔ معروف جعفری را بنا کند، او نیز فرغانی را برای این کار برگزید. گویا فرغانی در محاسبهٔ کار خود اشتباه کرد و بر اثر اشتباه او آب در نهر جاری نشد. از این رو، متوکل بر آنها خشم گرفت و تهدید کرد که ایشان را به دار می‌آویزد، اما متوکل چند ماه پس از این واقعه درگذشت (ابن دایه، ص ۳۶۷).

گویا در زمان همان خلیفه بود که فرغانی مأمور اندازه‌گیری ارتفاع آب رود نیل شد (روزنفلد، همان‌جا).

بیش از این، از زندگی فرغانی اطلاعی نداریم. تاریخ درگذشت او نیز در جایی نیامده است، گرچه کارلو آلفونسو نالینو، خاورشناس ایتالیایی در زمینهٔ اخترشناسی اسلامی، درگذشت او را ۲۴۷ق ذکر کرده (ص ۵۱)، اما این تاریخ را نمی‌توان با قطعیت پذیرفت.

فرغانی در نجوم شاخص است. شهرت نجومی وی حتی در قرن ۱۵م نیز مورد توجه دانشمندان اروپایی بود. در اروپای سده‌های میانه وی به «الفراگانوس» معروف بوده که کاملاً گویای شهرت علمی وی در جهان آن روزگار است (آلدومیه لی، ص ۱۸۴).

فرغانی نظریهٔ «اقبال ادبار» را، که یکی از مفاهیم مطرح در احکام نجوم بود، کاملاً قبول داشت؛ نظری که بتانی، یکی از معاصران او، و پس از او ابن یونس آن را نپذیرفتند. فرغانی برای فواصل سیارات و ابعاد آنها، اندازه‌هایی را به‌دست آورده بود که تقریباً بدون تغییری چشم‌گیر تا زمان کپرنیک مورد قبول دانشمندان و منجمان بود (همان، ص ۱۹۵).

او در نجوم آثاری نگاشت که برخی از آنها مورد توجه کسانی چون رجیو مونتانوس، ریاضی‌دان و ستاره‌شناس معروف آلمانی در سدهٔ ۱۵م، و دانته قرارگرفت (همان، ص ۱۸۴ - ۱۸۵).

آثار

از فرغانی آثار فراوانی باقی‌مانده است که در اینجا به اهم آنها اشاره می‌شود:

۱. اصول علم النجوم، این اثر با نام‌های دیگری چون جوامع علم النجوم و الحرکات السماویه، المدخل الی علم هیئة الافلاک و کتاب الفصول الثلاثین نیز در منابع ذکر شده است. فرغانی این اثر را تحت تأثیر مجسطی بطلمیوس تألیف کرده و کوشیده است تا اصول ستاره‌شناسی بطلمیوس را به زبان غیرریاضیْ بیان کند. وی با تألیف این کتاب، نجوم را در جهان اسلام وارد مرحله‌ای تازه کرد و این اثر تأثیر بسیاری در نجوم دورهٔ اسلامی و

3475 SELA, Shlomo. Al-Farghānī on the 48 Ptolemaic constellations: a newly discovered text in Hebrew translation. *Aleph: Historical Studies in Science & Judaism*, 16 ii (2016) pp. 249-365. Argues that Jacob Anatoli's (d.1256) Hebrew translation of al-Farghānī's *Elements* relies on an alternative redaction of the Arabic text (different from that known to modern scholarship), possibly belonging to the first phase of the Arabic Ptolemaic astronomical tradition. Includes a critical edition and English translation of chapter 22 of Anatoli's translation (pp. 285-313) with commentary (pp. 314-354).

2950 SELA, Shlomo. Al-Farghānī on the 48 Ptolemaic constellations: a newly discovered text in Hebrew translation. *Aleph: Historical Studies in Science & Judaism*, 16 ii (2016) pp. 249-365. Argues that Jacob Anatoli's (d.1256) Hebrew translation of al-Farghānī's *Elements* relies on an alternative redaction of the Arabic text (different from that known to modern scholarship), possibly belonging to the first phase of the Arabic Ptolemaic astronomical tradition. Includes a critical edition and English translation of chapter 22 of Anatoli's translation (pp. 285-313) with commentary (pp. 314-354).

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1545 SELA, Shlomo. Al-Farghānī on the 48 Ptolemaic constellations: a newly discovered text in Hebrew translation. *Aleph: Historical Studies in Science & Judaism*, 16 ii (2016) pp. 249-365. Argues that Jacob Anatoli's (d.1256) Hebrew translation of al-Farghānī's *Elements* relies on an alternative redaction of the Arabic text (different from that known to modern scholarship), possibly belonging to the first phase of the Arabic Ptolemaic astronomical tradition. Includes a critical edition and English translation of chapter 22 of Anatoli's translation (pp. 285-313) with commentary (pp. 314-354).

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	Ibn Māšā'allāh	Ma'mūn Geography	Ptolemy	modern
	Lat.	Lat.	Lat.	Lat.
Banā[1]	30°	--	--	
Damiette	31°	31°25'	--	31°26'
Tinnīs	31°	31°40'	--	31°15'

AL-FARĠĀNĪ

Fergani 060227

Aḥmad b. Muḥammad b. Kaṯīr al-Farġānī worked as an astronomer during the Caliphate of al-Ma'mūn and of his successors. His astronomical work (written between 218/833 and 247/861, see GAS, VI, 149-151) is the oldest extant Arabic presentation of the Ptolemaic world system, but it is not without its own peculiarities. Of the 30 chapters of the book, chapters 8 and 9 discuss topics of mathematical geography. In the 8th chapter he provides an uncomplicated explanation for the size of the earth and its depiction with longitudes and latitudes, for the seven climates and the length of a degree of the meridian as 56 2/3 miles, which was the result of the measurement undertaken at the behest of al-Ma'mūn. The chapter gives a list of countries and cities arranged according to the seven climates. The reason why al-Farġānī did not give the longitudes and latitudes of the countries and cities listed seems to have been that he considered that to be the task of a large, already established book of maps like that of the Ma'mūn geography.

It is rather interesting that he follows an east-west sequence while listing the cities and countries in his table of climates. In this he obviously follows an astronomical tradition that preceded the Ma'mūn geography. Another indication that he seems to follow an older tradition probably cultivated in Persia can be seen in the fact that his tables of climates **[241]** differ from those of the Ma'mūn geography.[2] On the other hand, leaving aside the counting from the east, Farġānī's table of cities exhibits its dependence on the Ma'mūn geography in its sequence. In the approximately 50 cities included in the table of climates, al-Farġānī seems to have selected from the Ma'mūn tables only those which do not have a Ptolemaic name, i.e. which are purely Arabic place names.[3]

Cairo 1919 (reprint in: *Islamic Geography,* vol. 63), p. 3 ff.

[1] see Maspéro, J. et Wiet, G., *Matériaux* p. 49.

[2] cf. Honigmann, *Sieben Klimata* pp. 137, 141.

[3] cf. ibid., pp. 135,154

The special importance of al-Farġānī's book for the history of geography lies in the fact that it enjoyed great popularity in the Latin world, particularly in Italy, due to its two Latin translations and its uncomplicated presentation, and that it provided a significant impetus for the study of mathematical geography. Its deep influence on Robert Grosseteste,[1] Ristorro d'Arezzo,[2] Dante Alighieri,[3] Hermann of Reichenau (Hermannus Contractus) may be mentioned here. In the case of the last mentioned author, it is particularly evident that he borrowed the form of Farġānī's climate description, "which Hermann filled unthinkingly with antique and occidental names of places and countries".[4]

Geographical information: In the *Kitāb Ğawāmiʿ ʿilm an-nuğūm wa-uṣūl al-ḥarakāt as-samāwīya* (see GAS, VI,150),[5] ed. by J. Golius, Amsterdam 1669 (reprint, Frankfurt, Institute for the History of Arabic-Islamic Science 1986 and 1997, pp. 30-39); partial edition of the passage on geography and Russian translation by Tatjana M. Kalinina, *Svedeniya rannich učonych arabskogo chalifata*, Moscow 1988, pp. 127-139.

[242] His table of climates:[6]

	Duration of the longest days in hours	Latitude	Duration		Latitude
	16 1/4	50°30'			
7th climate	16	48°55'	3rd climate	14	30°42'
	15 3/4	47°15'		13 3/4	27°30'
6th climate	15 1/2	45°24'	2nd climate	13 1/2	24°06'
	15 1/4	43°30'		13 1/4	20°30'
5th climate	15	41°20'	1st climate	13	16°40'
	14 3/4	39°		12 3/4	–
4th climate	14 1/2	36°24'			
	14 1/4	33°40'			

[1] see Duhem, *Le système du monde* III, 468.

[2] ibid., IV, 202.

[3] ibid., IV, 222; P. Toynbee, *Dante's obligations to Alfraganus in the Vita nuova and Convivio* in: Romania (Paris) 24/1895/413-432 (reprint in: *Islamic Geography*, vol. 68, pp. 105-124).

[4] see Honigmann, op. cit., p. 191, see GAS, X, 206.

[5] Correction to GAS, VI, 149, where this book by Farġānī is cited as not yet edited.

[6] Honigmann, op. cit., p. 137.

rational sciences and their embrace of the ideas of Ibn ʿArabī, were already on the retreat against the rise of Islamic reform, with Deoband in the vanguard. Important sources of support disappeared with the abolition of the Princely States and *zamīndarī* abolition, which led to the break up of large landed estates in their state of Uttar Pradesh. In addition, the partition of British India led to a scattering of the family not just to Pakistan but throughout much of the world. The Farangī Maḥallī tradition virtually disappeared. This said, in recent years there has been a revival of teaching in Lucknow under this distinguished name.

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FRANCIS ROBINSON

al-Farghānī

Aḥmad b. Muḥammad b. Kathīr **al-Farghānī** (d. after 247/861), an astronomer at the court of the ʿAbbāsid caliph al-Maʾmūn (r. 198–218/813–33), wrote an influential compendium of Ptolemy's *Almagest* in thirty chapters and a description of the construction of the astrolabe. Ibn al-Nadīm (d. c. 385/995), in his *Kitāb al-fihrist* (ed. Gustav Flügel, 2 vols., Leipzig 1871–2, esp. 1:279), mentions another book by al-Farghānī, on sundials. Only a fragment of his treatise on the seven climates survives (Cairo, Dar al-Kutub, MS Muṣṭafā Fāḍil, *mīqāt* 194/3, fol. 32r; the preceding anonymous fragment in that manuscript, on the times when the moon is "above the earth" (and thus visible), may also be by al-Farghānī; King, 34). Al-Bīrūnī (d. 440/1048) mentions, in his *Istikhrāj al-awtār* ("Finding of chords [in geometry]," 128, 168), an explanation by al-Farghānī of al-Khwārazmī's (d. c. 232/847) astronomical tables *(zīj);*

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His theory of prophecy was picked up and developed by Ibn Sina and adopted by the Jewish philosopher Maimonides, and resurrected again by Spinoza who, like al-Farabi, holds that revelation and inspiration are an existential function of imaginative power.

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SEVKET YAVUZ

FARGHANI, Ahmad ibn M. ibn Katir (third/ninth century)

Al-Farghani worked in Samarra during the 'Abassid caliphate (836–92). He was born, as his name suggests, in Farghana. He worked as a civil engineer in both Egypt, where he is said to have died, and Iraq, although not very successfully, since according to Ibn Abi Usaybi'a, a canal on which he worked never actually functioned.

Al-Mutawakkil had entrusted the two sons of Musa ibn Shakir, Muhammad and Ahmad, with supervising the digging of a canal named al-Ja'fari. They delegated the work to al-Farghani, thus deliberately ignoring a better engineer, Sind ibn 'Ali, who, out of professional jealousy, they had caused to be sent to Baghdad, away from al-Mutawakkil's court in Samarra. The canal was to run through the new city, al-Ja'fariyya, which al-Mutawakkil had built near Samarra on the Tigris and named after himself. Al-Farghani committed a grave error, making the beginning of the canal deeper than the rest, so that not enough water would run through the length of the canal except when the Tigris was high. News of this angered the Caliph, and the two brothers were saved from severe punishment only by the gracious willingness of Sind ibn 'Ali to vouch for the correctness of al-Farghani's calculations,

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Frankfurt am Main

Aḥmad ibn Muḥammad ibn Kathīr

AL-FARGHĀNĪ

Alfraganus

(about 850 A.D.)

Jawāmiᶜ ᶜilm al-nujūm wa-uṣūl al-ḥarakāt al-samāwīya

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تحليل مهمى كه شامل قطعاتى ازترجمهٔ عبرى يعقوب اناطولى از كتاب فى حركه السماويه ازفرغانى است .

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İ-FERGANİ
-İLM-İ FEN'E

28 MAYIS 1993

W.P. 4456/1. Cahiz Fergâni ibn Kutayba Belâzuri Ya'lubi

al-FARGHĀNĪ (Aḥmad ibn Muḥammad ibn Kathīr)

LEWICKI (Tadeusz).

Źródła arabskie do dziejów Słowiańszczyzny. Wydał i opracował T. Lewicki. [Short quotations from Khuwārazmī, Ibn Khurdāḏbah, Jāḥiẓ, Farghānī Ibn Ḳutaibah, Balāḏurī and Ya'ḳūbī relevant to the study of Slavonic history. The Arabic texts, with Polish translation and commentary.]

Wrocław, Kraków, 1956- 8°.

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(إله الحب عند اليونان) Eros (١٨٧٥) الذي وضع نهاية لحياته برصاصة، بعد أن عاش مغامراته العاطفية.

حاول فِرغا في رواياته الكشف عن عيوب المجتمع المعاصر اللاأخلاقي مع إبراز عُقَدِه النفسية وتلاعبه بالمشاعر. وبعد أن هاجم طبقة الأثرياء كتب عام ١٨٧٤ أقصوصة مختلفة عن رواياته في الأسلوب والموضوع وعنوانها «ندا» Nedda، وهي تتحدث عن قاطفة الزيتون التي كانت تبحث عن الوجدان والعاطفة الحقيقية في ضيعة في صقلية، وكانت ضحية الفقر المدقع. وقد انتقد فِرغا موقف المتفرج إزاء مآسي الحياة سواء أكان من الطبقة الفقيرة أم الثرية، فمن مآسي الحياة يذكر على سبيل المثال محطة يتقابل فيها قطاران أحدهما ينقل جثة ضحية الحب البارونة المقهورة، والثاني كان يركبه عشيقها مع زوجته وابنته مسافرين إلى المصيف.

لم يلجأ فِرغا إلى التحليل النفسي لشخصياته، بل كان يتركها تتحرك وفق سجيّتها وكانت تصرفاتها تدلّ على نواياها. وقد أوضح ذلك للنقاد في مقدمة روايته «حواء» قائلاً: «لاتلقوا اللوم والمسؤولية على الفن، فله قلب لاتملكونه، وأحاسيس لاتشعرون بها ترى البؤس الذي ترونه وتضحكون». كذلك يقول فِرغا واصفاً هدفه: «أفكر في عمل ضخم يقدم صورة عن كفاح الإنسان من أجل الحياة مروراً بالعامل البسيط والوزير والفنان. كفاح يأخذ أشكالاً مختلفة من طموح ومكاسب ومشاعر نبيلة ودنيئة تعطي صورة مضحكة عن البشرية التي تسعى نحو الحقائق، كل وفق خُلُقه وطباعه».

أراد فِرغا أن يكون شاعر المقهورين Vinti، ضحية أنانية الآخرين أو زيف مشاعرهم، ففي روايته «حياة الأرياف» Vita dei campi (١٨٨٠) يصور اصطحابه إحدى سيدات المجتمع الراقي إلى الريف، وقد أبدت السيدة حماساً في البداية للعيش في هذه البيئة، وفي اليوم التالي فقط أبدت نفورها واشمئزازها متسائلة كيف يمكن أن يتحمل الآخرون العيش هناك. أما روايته «عديمو الإرادة» I Malavoglia (١٨٨١) فتصف مأساة عائلة من صيادي السمك، عانت أهوال الإدمان والبغاء والموت والغرق. وقد أوحت هذه القصة للمخرج السينمائي فيسكونتي Visconti بفيلم سينمائي.

كان فِرغا يقدّر عالياً شجاعة أولئك الذين يقاسون مرارة العيش، وبما أنه لم يكن يؤمن بشيء فقد مال إلى التشاؤم وسيطر اليأس عليه، ومن ثمّ باءت محاولات شخصياته كلها لتحقيق العدالة أو إيجاد مستقبل أفضل بالإخفاق. لم يعرف هذا الأديب السعادة، وحتى زواجه من بيانكا تراو Bianca Trao كان تغطية لعلاقة مشبوهة.

أسهم فِرغا في نشأة مسرح واقعي وساعده نجاح مسرحيته «النخوة القروية» Cavalleria rusticana (١٨٨٤) على متابعة أعماله المسرحية، منها «على البوابة» In portineria (١٨٨٥) و«الذئبة» La Lupa (١٨٩٦).

يؤخذ على الروائي الرتابة في الأسلوب، وإن تدارك ذلك لاحقاً بالسعي إلى إدخال بنية خيالية أكثر تعقيداً، متناولاً أكثر من فئة اجتماعية. أما لغته فكانت مزيجاً من اللغة المكتوبة والمحكية نتيجة تحدثه بألسن شخصيات مختلفة.

بقي فِرغا الأديب الذي طالب أن يتوخى الأدب دراسة الحقيقة، كما بقي وصفه فريداً من نوعه في الأدب الإيطالي.

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■ الفرغاني (أحمد بن محمد بن كثير-)

أبو العباس أحمد بن محمد بن كثير الفرغاني، وهو في فهرست النديم محمد بن كثير، فلكي بارع برز في خلافة المأمون الذي جعله من المنجّمين المقرّبين إليه، إذ كان المأمون من المهتمين بعلم الفلك والتنجيم، عُرف الفرغاني بين أوساط علماء الفلك بالغرب باسم الفرغانوس Alfraganus .

يذكر بعض المترجمين لحياته أنه كان حياً عام ٢١٢هـ/٨٢٧م، واختلفوا في عام وفاته، ففي رواية توفي عام ٢٣٧هـ/ ٨٥١م.

آثاره ومؤلفاته: جميعها في علم الفلك والإسطرلاب وهي: «المدخل إلى علم هيئة الفلك»، اشتهر بين علماء الفلك باسم «جوامع علم النجوم والحركات السماوية وأصول علم النجوم والفصول الثلاثين وعلل الأفلاك»، رتبه الفرغاني في ٣٥ فصلاً، ونسخه الخطية موزعة في دار الكتب المصرية بعنوان «كتاب أصول علم النجوم»، وفي المكتبة الوطنية بتونس وفي مكتبة ليدن بهولندا ضمن مجموع، وفي مكتبة بودليان بأكسفورد،

ENCYCLOPAEDIA IRANICA, Vol. IX, NEW YORK 1999,pp.

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(C. EDMUND BOSWORTH)

FARḠĀNĪ, AḤMAD b. Moḥammad b. Kaṯīr, Muslim astronomer. Farḡānī flourished at Sāmarrā during the period that it served as the capital of the ʿAbbasid caliphs (836-92 C.E.), though Ṣāʿed Andalosī (p. 141) states that he was one of al-Maʾmūn's astronomers. Nothing is known about his family nor much about his life beyond his authorship of a triad of influential works and his unsuccessful attempt to construct a canal, which was to run through the new city of al-Jaʿfarīya. This was entrusted by Motawakkel (847-61) to Moḥammad and Aḥmad, sons of Mūsā b. Šāker, who delegated the work to Farḡānī; the latter's error prevented the canal from carrying sufficient water (Ebn Abī Oṣaybeʿa, I, p. 207). It is also reported that Farḡānī restored the nilometer at Cairo (Wiet). Both of these projects were completed in 247/861, the year of al-Motawakkel's death. Farḡānī himself apparently died in Egypt and was buried in Cairo.

Farḡānī's principal work, the *Ketāb jawāmeʿ ʿelm al-nojūm wa oṣūl al-ḥarakāt al-samāwīya* (Book of generalities of astronomy and bases of celestial motions; ed J. Golius as *Fi'l-ḥarakāt al-samāwīya wa jawāmeʿ ʿelm al-nojūm*, Amsterdam, 1669) in thirty chapters, is a summary of Ptolemaic astronomy. Chapter 1 deals with the Arab, Syrian, Roman, Persian, and Egyptian calendars; chapters 2-5 with the celestial spheres and their two principal motions; chapters 6-9 with geography, the seven climes, and their principal cities (see Honigmann, pp. 134-55); chapters 10-11 with right and oblique ascensions of the zodiacal signs and with equatorial and seasonal hours; chapters 12-18 with the models and motions of the luminaries and the planets; chapters 19-20 with the fixed stars and the lunar mansions; chapters 21-22 with the distances and sizes of the planets and the fixed stars; chapters 23-24 with the meridian transits, risings, settings, and occultations of stars and planets; chapter 25 with the phases of the moon; chapter 26 with the first visibilities of the planets; and chapters 27-30 with parallax and with solar and lunar eclipses.

Because of its simplicity and clarity the book enjoyed enormous popularity. Commentaries in Arabic were composed by Abu'l-Ṣaqr Qabīṣī (Sezgin, IV, p. 209), Abū ʿObayd Jūzjānī (ibid., p. 281), and Bīrūnī (Boilot, p. 181 [RG 14]). It was translated into Latin by John of Seville in Limia in 1135 (printed at Ferrara in 1493, at Nuremburg in 1537, at Paris in 1546; ed. F. J. Carmody as *Differentie scientie astrorum*, Berkeley, Calif., 1943), and by Gerard of Cremona in Toledo before 1175 (ed. R. Campani as *Il 'libro dell aggregazione delle stelle'*, Città di Castello, Italy, 1910). It was also translated into Hebrew by Jacob Anatoli, probably in Marseille, between 1231 and 1235 (ed. and tr. into Latin I. Christmannus as *Chronologica et astronomica elementa*, Frankfurt, 1590). There are several commentaries on the Hebrew translation, e.g., by Maimon of Montpelier, by Moshe Khandali, by Isaac b. Samuel in Padua (1496), and by Jehuda b. Verga of Seville in Lisbon (Steinschneider, pp. 554-57). Indeed, among readers of Latin and Hebrew in the medieval period, the theories of Ptolemaic astronomy were often known only through Farḡānī's compendium.

On the astrolabe Farḡānī wrote one of the earliest surviving treatises, *al-Ketāb al-kāmel fī ṣanʿat al-asṭorlāb al-šemālī wa'l-janūbī wa ʿelalehā be'l-handasa wa al-ḥesāb* (Complete book on the art of the northern and southern astrolabe and its principles in geometry and computation). This important book is unedited, but the preface has been translated into German by Eilhard Ernst Gustav Wiedemann (1984, II, pp. 886-88) and the tables to be used in constructing circles on the *omm* of the astrolabe have been described and illustrated by David King (pp. 53-55). There is a supplement to this treatise written by Aḥmad b. Moḥammad Azharī Ḵāneqī in the middle of the 14th century, and Farḡānī's opinion of the "melon-shaped" astrolabe is cited by Bīrūnī (Wiedemann, 1970, II, p. 523).

The third influential treatise by Farḡānī was his *Taʿlīl le-zīj al-Ḵʷārazmī*, which is now lost but was extensively used ca. 890 by Hāšemī (pp. 102-9, 229-41) and in the 10th or 11th century by Ebn al-Moṯannā in his *Taʿlīl le-zīj al-Ḵʷārazmī*, which is preserved in both Hebrew and Latin translations. Farḡānī's commentary was also referred to by Bīrūnī in his *Ketāb esteḵrāj al-awtār* (*Rasāʾel al-Bīrūnī*, Hyderabad, 1948, I, pp. 128 f. and 168 f.).

Farḡānī also wrote a *Ketāb ʿelal al-aflāk* (Book of the Principles of the spheres), from which an excerpt is given by Ebn Rosta (pp. 9-11; for German tr., see Wiedemann, 1984, I, pp. 326-28), and a *Ketāb ʿamal al-roḵāmāt* (Book of making horizontal sundials; Sezgin, IV, p. 151).

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DEUX SOURCES ARABES DE S. ALBERT LE GRAND: THĀBIT B. QURRA ET AL-FARGHĀNĪ

par

A. Cortabarría Beitia, o.p.

Dans la longue liste des savants arabes mentionnés ou utilisés par S. Albert le Grand, dans ses commentaires à l'œuvre d'Aristote, figurent ces deux astronomes, Thābit b. Qurra et al-Farghānī, dont nous tâcherons de montrer la place dans l'œuvre du savant dominicain, en nous servant, sauf indication contraire, de l'édition de ses *Opera omnia* par A. Borgnet.

— I —

La personne et l'œuvre de Thābit b. Qurra (824–901).

Thābit, originaire de Harrān (Haute-Mésopotamie aujourd'hui Turquie), était de la secte des Sabéens. Il a vécu dans le Bagdad du 9e siècle, alors grand foyer d'activité intellectuelle, à la suite de la pénétration de la philosophie grecque dans le monde arabe. Sa langue maternelle était le syriaque, dans lequel il a écrit quelques ouvrages, mais la plupart de son œuvre a été écrite en arabe. Grâce à sa connaissance du grec, il a pu non seulement corriger quelques traductions de cette langue en arabe, mais encore en faire d'autres directement. Il s'est orienté surtout vers les mathématiques, l'astronomie, l'astrologie et, dans une moindre mesure, vers les sciences occultes. Son prestige était grand dans la cour de son protecteur, le calife al-Muʿtaḍid, qui a régné de 892 à 902.

Le goût de l'astronomie s'est maintenu dans sa famille: son fils Sinān b. Thābit (m. 943) et son petit-fils Ibrahīm b. Sinān (m. 946) s'y sont particulièrement distingués. La ressemblance de ces noms avec celui de Thābit b. Qurra a d'ailleurs donné lieu à des hésitations quant à l'attribution de certaines œuvres à un de ces trois auteurs.

3° *Liber de Tabula motus octavi*[16], qui contient les Tables qui complètent le *Liber de motu octavae sphaerae*.

4° *Liber de diffinitionibus*, qu'on peut identifier, à cause de la remarque de S. Albert, selon laquelle ce traité commence par les mots «Aequator diei»[17], comme étant le *De iis quae indigent expositione antequam legatur Almagestum*[18].

5° *Liber de Excentricitate orbium*[19].

6° Enfin, Thābit est cité, dans le *De Mineralibus*, parmi des auteurs de livres sur les sciences occultes, sans que S. Albert mentionne aucun titre d'ouvrage[20].

Quelques théories de Thābit recueillies par S. Albert

L'*Almageste* de Ptolémée, qui a été longtemps le livre d'astronomie le plus connu, et dont se sont nourris les astronomes arabes, a été pour ceux-ci l'objet de résumés et de commentaires. Ils ont aussi composé des *Tables* pour son utilisation et n'ont pas manqué non plus de critiquer certaines théories de son auteur. Dans le *Guide des Egarés*, Maïmonide fait à plusieurs reprises allusion aux idées astronomiques de Thābit à propos de Ptolémée[21].

L'aspect le plus original de l'astronomie de Thābit, est sa théorie de la trépidation, connue aussi comme le mouvement d'accès et de recès des étoiles fixes[22].

Voyons maintenant brièvement quelques notions astronomiques de Thābit qu'on trouve dans S. Albert.

a) *La composition des sphères*

Dans le *De coelo et mundo* (1er traité du livre 1er), S. Albert aborde la question de la perfection du monde et expose sa doctrine sur la nature des cieux en opposition avec le monde d'ici-bas, qu'on peut ainsi résumer: le mouvement des cieux est circulaire, les corps célestes ne sont ni lourds, ni légers, ne sont ni engendrés, ni corruptibles; le ciel n'admet aucune espèce d'altération physique de diminution, ni d'augmentation; le mouvement circulaire — propre des cieux — n'a pas de mouvement contraire[23].

Se demandant ensuite si les corps célestes s'altèrent «secundum rarum et spissum», il rappelle d'abord la position des péripatéticiens, pour lesquels le monde est plus épais en une partie qu'en l'autre, et conclut qu'il n'y a pas d'inconvénient à ce que les cieux s'altèrent «secundum rarum et spissum».

Si on admet cependant — comme c'est l'opinion générale — qu'il n'y a pas de vide entre les sphères excentriques, on est obligé de reconnaître l'existence

more detailed account of the area, "On the Ashover Denudation in the County of Derby," was read to the Geological Society of London (of which Farey was never a member) in April 1813. It was accompanied by a detailed section and a large map. Unfortunately it was never published, possibly because of its length, and this gave rise to much ill feeling on Farey's part toward the officers of the society.

Farey was an inveterate compiler of lists and indexes, some of which, listing localities of fossils named in Sowerby's *Mineral Conchology* and William Smith's works on fossils, were published in the *Philosophical Magazine*. As a mineral surveyor he visited many parts of the British Isles, and his knowledge was drawn on by G. B. Greenough in the compilation of his *Geological Map of England and Wales* (1819).

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II. SECONDARY LITERATURE. An obituary notice in the *Monthly Magazine,* n.s. **1** (1826), 430, was drawn on by W. S. Mitchell in his "Biographical Notice of John Farey," in *Geological Magazine,* **10** (1873), 25–27. L. R. Cox, in "New Light on William Smith and His Work," in *Proceedings of the Yorkshire Geological Society,* **25** (1942), 1–99, describes Farey's relations with Smith and lists a number of the articles in which he refers to Smith; John Challinor, "From Whitehurst's 'Inquiry' to Farey's Derbyshire," in *Transactions and Annual Report. North Staffordshire Field Club,* **81** (1947), 52–88, provides a valuable commentary on Farey's work in Derbyshire; Trevor D. Ford describes and discusses Farey's MS sections in "The First Detailed Geological Sections Across England, by John Farey (1806–8)," in *Mercian Geologist,* **2** (1967), 41–49, with reproductions (redrawn) of three of Farey's sections.

JOAN M. EYLES

AL-FARGHĀNĪ, ABU'L-ʿABBĀS AḤMAD IBN MUḤAMMAD IBN KATHĪR (*b.* Farghāna, Transoxania; *d.* Egypt, after 861), *astronomy.*

Al-Farghānī was one of the astronomer-astrologers employed by the Abbasid caliph al-Maʾmūn, who reigned in Baghdad from 813 to 833. His name sometimes occurs in the Arabic sources as Muḥammad ibn Kathīr, sometimes as Aḥmad ibn Muḥammad ibn Kathīr, and it was probably this variation (in addition to variations of the title of his best-known book—see below) that led Ibn al-Qifṭī to assume the existence of two Farghānīs, a father and a son. But this assumption has now been generally dismissed as very likely no more than a misunderstanding.[1]

Al-Farghānī's activities extended to engineering, and it is in connection with his efforts as an engineer that we have some biographical information about him. According to Ibn Taghrībirdī, he supervised the construction of the Great Nilometer (*al-miqyās al-kabīr*), also known as the New Nilometer (*al-miqyās al-jadīd*), at al-Fusṭāṭ (Old Cairo). It was completed in 861, the year in which the caliph al-Mutawakkil, who ordered the construction, died. (The *Wafayāt al-aʿyān* of Ibn Khallikān reports the event but, in the Cairo edition, gives the name of the engineer as Aḥmad ibn Muḥammad al-Qarṣānī, the last word being no doubt a corruption of "al-Farghānī"—see bibliography.) But engineering was not al-Farghānī's forte, as appears from the following story, which Ibn Abī Uṣaybiʿa transcribed from the *Kitāb al-Mukāfaʾa* of Aḥmad ibn Yūsuf,[2] who heard it from Abū Kāmil.

Al-Mutawakkil had charged the two sons of Mūsā ibn Shākir, Muḥammad and Aḥmad, with supervising the digging of a canal named al-Jaʿfarī. They delegated the work to "Aḥmad ibn Kathīr al-Farghānī who constructed the New Nilometer," thus deliberately ignoring a better engineer, Sanad ibn ʿAlī, whom, out of professional jealousy, they had caused to be sent to Baghdad, away from al-Mutawakkil's court in Sāmarrā. (The caliphal capital had been transferred from Baghdad to Sāmarrā by al-Muʿtaṣim in 836.) The canal was to run through the new city, al-Jaʿfariyya, which al-Mutawakkil had built near Sāmarrā on the Tigris and named after himself. Al-Farghānī committed a grave error, making the beginning of the canal deeper than the rest, so that not enough water would run through the length of the canal except when the Tigris was high. News of this angered the caliph, and the two brothers were saved from severe punishment only by the gracious willingness of Sanad ibn ʿAlī to vouch for the correctness of al-Farghānī's calculations, thus risking his own welfare and possibly his life. As had been correctly predicted by astrologers, however, al-Mutawakkil was murdered, shortly before the error became apparent.[3] The explanation given for al-Farghānī's mistake is that being a theoretician rather than a practical engineer, he never successfully completed a construction (*wa-kānat maʿrifatuhu awfā min tawfīqihi li-annahu mā tamma lahu ʿamalun qaṭṭu*).

Fergani

67. AHMAD AL-FARGHANI

Abu'l-`Abbās Aḥmad ibn Muḥammad ibn Kathīr al-Farghānī (d. 861) from Farghāna, worked in Baghdad under Caliphs al-Ma'mūn, al-Mu`taṣim, al-Wāthiq, and al-Mutawakkil. He participated in determining 1^{o} of terrestrial meridian in the Sinjar plain, see "Geodesy" (No 348, G3) of al-Bīrūnī [31] (179-182). In 861 by the order of al-Mutawakkil he restored the Great Nilometer on the island Rawda of the river Nile in Cairo and was executed by the order of the same caliph in the same year. As he was buried in the Christian cemetery in Cairo (see Wiet [1]), it is presumed that al-Farghānī came from the Central Asian Christians and his contacts with the Egyptian Christians-Copts was the cause of his execution. In medieval Europe he was known as "Alfraganus". (Dante Alighieri (1265-1341) in his "Divine Comedy" mentioned him as "Alfragano").

See: AGL (86-88), GAL^2 (I 392-393), GAS (V 259-260, VI 149-151, X), HD (248), HD^2 (161), IHS (567), KF (279), KF^2 (34), KZ (II 288, IV 438-439, V 419), MAA (18-19), MAA^2 (160), MAMS (II 55-58), SSM (34), TH (78); Baldi [1] (431-433), Bouzid [1] (ENWC), Delambre [1] (63-73), Hasanov [7] (26-29), Kapp [1] (III 38-39), King [32], Mieli [2] (87-88), Nasyrov and Hikmatullayev [1], Rosenfeld [44], Rosenfeld, Dobrovol'skiy and Sergeyeva [1], Rosenfeld, Dobrovol'skiy and Sergeyeva [2], Rosenfeld and Sergeyeva [1], Sabra [5a] (DSB), Sergeyeva [1, 3], Suter [38] (EI), [48] (IA), Suter and Vernet [1] (EI^2), Walzer [4] (DSB), Wiet [1].

A1. Book on Elements of Astronomy (Kitāb fī uṣūl `ilm al-nujūm) = Book on Celestial Movements and Survey of the Science of Astronomy (Kitāb fī'l-ḥarakāt al-samāwiyya wa jawāmi` `ilm al-nujūm) = Book of Astronomy in Thirty Chapters (Kitāb al-hay`a al-fuṣūl al-thalāthīn) = Chapters of Introduction to Almagest, i. e. Thirty Chapters (al-Fuṣūl madkhal li'l-Majisṭī wa huwā thalāthūna faṣlan) = Causes of Celestial Spheres (`Ilal al-aflāk) = Construction of Celestial Spheres (Tarkīb al-aflāk) = Almagest (al-Majisṭī) = Science of Astronomy (`Ilm al-hay'a) - Amsterdam (47 - under the second title), Baghdad (2959 - under the sixth title), Cairo (mīqāt 944 - under the first title, Fāḍil. maj. 47/1, mīqāt 194/1 - under the second half of the second title), Dublin (Beatty 4114 - under the second title), Fās (Zāwiya 5b - under the eighth title), Istanbul (SM AS 2843/2 - under the fourth title, Carullah 1279/33 - under the first title), Leiden (8418/5 - under the second title), Moscow (154/2 - under the second half of the second title), Oxford (I 879/1 - under the second title), Paris (2504/3 - under the third and fourth titles), Princeton (Garr. 967 - under the seventh title), St. Petersburg (B 3059/3 - under the first title), Tunis (Nat. 02103/1 - under the second title).

Edition of the Oxford manuscript with Latin translation by Colius: al-Farghānī [4]. Latin translations: by Johannes of Seville: al-Farghānī [1], the same translation edited by Regiomontans: al-Farghānī [2]; by Gherard

[illegible] al-arḍ aw taḥtāna) - Cairo (Fāḍil miqāt 194/2).

A6. Calculation of Seven Climates (Ḥisāb al-aqālim al-sab`a) - Cairo Gotha (1523) - a fragment of A1.

A7. Book on Construction of Sundials (Kitāb `amal al-rukhāmāt) - Aleppo (Kaddur), Cairo (Kahrabai).

A8. Explanation of Reasons of the Zīj of al-Khwārizmī (Ta`līl lī'l-zīj al-Khwārizmī) - quoted in "Chords" (No 348, M4) of al-Bīrūnī.

G1. Names of Known Cities and Countries (asmā al-mudun wa'l-buldān al-ma`rūfa) - Tehran (Univ. 2031).

Another of the early Baghdad astronomers was Abu-al-'Abbas al-Farghani, who also wrote on the astrolabe, this time a substantial book which is an improvement on al-Khwarizmi's, giving not only the mathematical theory behind the instrument but also correcting faulty geometrical constructions for the central disc which were current at the time. Al-Farghani also wrote a more general book on astronomy, a critical commentary on al-Khwarizmi's *zij*, and a commentary on the *Almagest*. This last was most important since it gave, in Arabic, a thorough account of Ptolemaic astronomy in a clear and well-organized text which enjoyed considerable popularity.

If al-Farghani was more a theoretician than a practical observer, so too was another of the House of Wisdom's astronomer-mathematicians, the Mesopotamian Arab Thabit ibn Qurra. He was more

Jawami' 'ilm al-nujum wa-usul al-harakat al-samawiya, s.5-7.1986 (FRANKFURT)

Nahifa kitap basım yılı

بسم الله الرحمن الرحيم

مقدمة الناشر

إن كتاب "جوامع علم النجوم وأصول الحركات السماوية" لأحمد بن محمد بن كثير الفرغاني هو أقدم كتاب عربي وصل إلينا كاملاً في عرض النظام الفلكي البطلميوسي. لا نعرف عن حياة مؤلفه شيئاً سوى ما تسمح لنا كتبه بتخمينه وهو أنه كان من الفلكيين العباسيين في بغداد وألف كتابه هذا في الفترة بين ٢١٨هـ/٨٣٣م و ٢٤٧هـ/٨٦١م(١). وصحيح أن يعتبر الكتاب عرضاً وجيزاً لمجسطي بطلميوس مع إهمال التفاصيل والنقاش الرياضي، وبالرغم من الهدف المتواضع للكتاب لم يخف على البحث الحديث أن يرى فيه بداية المرحلة التي أخذ الفلكيون العرب فيها يأتون بعناصر جديدة في علم الفلك ويتخذون موقف الشك والحذر مما تحتويه كتب بطلميوس. فعلى كل حال فإن شهرة الفرغاني البعيدة المدى لا ترجع إلى تلك العناصر التي لعلها جديرة بأن تفهم مساهمة من العرب والمسلمين في تطوير ما أخذوا من الأسلاف في ذاك العهد المبكر، بل ترجع إلى أثره الكبير على المشتغلين بهذا العلم في العالم اللاتيني. ومن المعروف أن كتاب الفرغاني كان ليس بأول ماترجم إلى اللاتينية ولا أهم ما ترجم من الكتب العربية في علم الفلك، ولكن تيسر له نصيب كبير من الاشتهار والتأثير وتهيئة الظروف في تنمية القدرة والاستعداد لأخذ وتمثل ما احتوت عليه الكتب العربية الفلكية من التطور.

ترجم الكتاب إلى اللاتينية على يد يحيى الإسباني (Johannes Hispalensis) حوالى سنة ١١٣٤م ثم على يد جراردس الكرموني (Gerard of Cremona) بعد نحو نصف قرن من الترجمة الأولى. وتلت ذلك ترجمة عبرية ليعقوب الأناضولي

Aḥmad b. Muḥammad b. Kaṯīr al-Farġānī befaßte sich in erster Linie mit der Astronomie und räumte darin auch der Geographie und Mathematik (s. GAS V, 259 f.) einen wesentlichen Platz ein. Er lebte anscheinend zur Zeit von AL-MA'MŪN und seinen ersten Nachfolgern. Für die Abfassungszeit seines Hauptwerkes hat HONIGMANN (*Sieben Klimata* 136) als termini *post* und *ante quem* die Jahre 218/833 und 247/861 gefunden. Die arabischen Texte seiner Werke sind noch nicht ediert worden. Unsere gegenwärtige Kenntnis über seine Stellung beruht hauptsächlich auf der Übersetzung seines astronomischen Werkes ins Lateinische; es wurde zweimal übersetzt und mehrfach gedruckt und erfreute sich im Abendland einer großen Verbreitung.

Arabische Gelehrte verweisen nicht selten auf die Beziehung des astronomischen Werkes al-Farġānī's zum *Almagest*. Dieser Frage ist HONIGMANN (a. a. O. S. 136) nachgegangen. Nach seiner Ansicht enthält das Buch „tatsächlich viel ptolemäisches Gut, das jedoch wenigstens nicht ausschließlich aus dem *Almagest* stammen kann" und ist ferner in seiner Anlage mit den *πρόχειροι κανόνες* verwandt. HONIGMANN (ebd. S. 138) weist auf eine auffallende Eigenschaft des Buches hin, daß nämlich AL-FARĠĀNĪ in seinen Klimatafeln ausdrücklich betone, er beginne mit den Klimata von Osten her, also nicht, wie bei anderen Astronomen und Geographen üblich, mit einem westlichen Nullmeridian.

Mit dem Inhalt der Astrolabschrift AL-FARĠĀNĪ's haben sich E. WIEDEMANN und J. FRANK befaßt. Sie heben hervor, daß AL-FARĠĀNĪ als erster darauf hingewiesen habe, daß die Bestimmung der Dämmerungserscheinungen von der Veränderung der Luft und von der Zu- und Abnahme des Mondes abhängt, und daß „schon er verschiedene Sonnenhöhen für beide Erscheinungen" annehme[2].

Zu seinen Anhängern im Abendland gehörte REGIOMONTAN; er hielt in Padua im Jahre 1464 eine Vorlesung über ihn[3].

[1] Dort lautet der Name al-Ḥusain b. Miṣbāḥ al-Ḥāsib.

[2] *Die Gebetszeiten im Islam* in: SPMSE 58/1926/23 (Wiedemann, *Aufsätze* II, 779). [3] Von Braunmühl I, 119, a. a. O. S. 54.

„über die geometrische Konstruktion der Mittagslinie und der Gebetsrichtung". – *R. fi stiḫrāǧ as-sā'āt 'alā niṣf kura bi-l-handasa*, „über die geometrische Auffindung der Stunden auf einer Halbkugel". – *R. fī 'Amal as-sā'āt 'alā ṣafīḥa tunṣabu 'ala s-saṭḥ al-muwāzī li-l-ufq ḫair min ġairihā*, „über die Konstruktion von Stundenlinien auf einer Platte, die auf einer horizontalen Ebene senkrecht steht, und die besser sind als die anderen." – *R. fī Ab'ād masāfāt al-aqālīm*, „über die Ausdehnung einzelner Klimata". – *R. fi stiḫrāǧ ālatin wa-'amalihā yustaḫraǧ bihā ab'ād al-aǧrām*, „über die Konstruktion und Funktion eines Instrumentes, mit welchem die Entfernungen der für uns sichtbaren Körper bestimmt werden" (s. SUTER, *Mathematiker-Verzeichnis* 10–15). – *R. fi l-Ibāna 'an al-a'dād allatī ḏakarahā Aflāṭūn fī kitābihī as-Siyāsa*, „Erklärung der Zahlen, die Platon in seinem Buch über den Staat erwähnt". – *R. fī Ta'līf al-a'dād*, „über die Zusammensetzung der Zahlen."

AL-FARĠĀNĪ

Abu l-'Abbās Aḥmad b. Muḥammad b. Kaṯīr AL-FARĠĀNĪ (ALFRAGANUS) lebte als Astronom und Geograph zur Zeit al-Ma'mūns und seiner Nachfolger. Die Mathematik, besonders die Geometrie, interessierte ihn grundsätzlich als Hilfsdisziplin für seine Hauptgebiete. VON BRAUNMÜHL bedauerte es im Jahre 1900 (S. 48), daß die erhaltenen Fragmente aus den Werken al-Farġānī's einen völlig ungenügenden Einblick in seine astronomischen Schriften bieten. Später hat WIEDEMANN auf die Bedeutung des theoretischen Teiles seiner astronomischen Schrift *al-Kāmil* über das Astrolab aufmerksam gemacht[1]. Für AL-FARĠĀNĪ sind das Astrolab und die Armillarsphäre auf der Grundlage der Geometrie konstruierte Meßinstrumente. Daher nennt er sein Buch darüber: *al-Kāmil fī ṣan'at al-asṭurlāb aš-šimālī wa-l-ǧanūbī wa-'ilalihā bi-l-handasa wa-l-ḥisāb*. Bei der Herstellung des Instrumentes und bei der Messung mit dem Astrolab berücksichtigten seine Vorgänger „nur das, was die Kenntnis von dem seiner Gestalt zugrunde liegenden Prinzip und die erstrebte Richtigkeit der mit ihm gewonnenen Angaben (Hinweise) erfordert." Er habe „aber keine Nachricht darüber erhalten, daß einer von ihnen (den früheren Gelehrten) in einem Werk diese Verhältnisse auseinandergesetzt hat . . ." (a. a. O. S. 22). Infolgedessen leitet er sein Buch mit einem Kapitel über geometrische Gegenstände und Figuren ein (*fī taqdīm aškāl handasīya*).

[1] *Einleitungen zu arabischen astronomischen Werken* in: Das Weltall 20, Heft 3–4/1919/21–23.

FERGÂNÎ

٢٦٤ ـ (٤) ـ جوامع علم النجوم وأصول الحركات ★

منه نسخة في مكتبة جار الله بتركيا ضمن مجموع ،رقم (١٢٧٩) من (٣٨٣ ب ـ ٣٩٢ ب) منسوخة سنة ٨٨٢ هـ [١] .

ومنه نسخة أخرى في المكتبة الخديوية بمصر ضمن مجموع ، رقم (١٩٤ / ٨٠٣٤) منسوخة سنة ٨٧٦ هـ [٢] .

ومنه صورة محفوظة في مركز البحث العلمي بجامعة أم القرى بمكة المكرمة ، رقم (١٥ فلك) في (٤٧) ورقة ، منسوخة سنة ٧٤٠ هـ ، عن الأصل المحفوظ في مكتبة تشستر بتي رقم (٤١١٤) .

٢٦٥ ـ (٥) ـ رسالة في إكمال ما أهمله الفرغاني في كتابه الذي وضعه في عمل الإسطرلاب ★

لأحمد بن محمد بن أحمد الخانقي الأزهري .

منه نسخة في مكتبة رئيس الكتاب ضمن مجموع ، رقم (٢/١٢٠٢) من (٨ ب ـ ١٤ ب) منسوخة في القرن الحادي عشر الهجري [٣] .

٢٦٦ ـ (٦) ـ رسالة في الإسطرلاب ★

« مختصر لكتاب الإسطرلاب للفرغاني » .

لمجهول .

منها نسخة في دار الكتب الظاهرية بدمشق ، رقم (٩٢٣٩) في (١٤) ورقة ،

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(١) نوادر المخطوطات العربية في مكتبات تركيا ٢ : ٢٩٤ .

(٢) فهرست الكتب العربية المحفوظة بالكتبخانة الخديوية المصرية ٥ : ٣١٠ .

(٣) نوادر المخطوطات العربية في مكتبات تركيا ١ : ٤٤٨ .

منسوخة سنة ٤١٣ هـ [١] .

٢٦٧ ـ (٧) ـ رسالة في صنعة الإسطرلاب بالهندسة ★

منه نسخة في مكتبة ألمانيا ضمن مجموع رقم (٥٦/٥٧٩٣) من (٧٧أ ـ ٩٧) [٢] .

٢٦٨ ـ (٨) ـ كتاب في صنعة الإسطرلاب والبرهان عليه ★

منه نسخة في مكتبة ألمانيا ، ضمن مجموع ، رقم (٩٩ / ٥٧٩٢) من (١ ـ ٤٠) منسوخة سنة ٧٨٣ هـ [٣] .

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(١) فهرس مخطوطات دار الكتب الظاهرية (العلوم والفنون المختلفة عند العرب) ص ١٩٢ .

(2 , 3) Die handschriften Verzeichnisse der Koniglichen Bibliothek Zu Berlin V : 227 .

Aḥmad ibn Muḥammad ibn Kathīr

AL-FARGHĀNĪ

Alfraganus

(about 850 A.D.)

Jawāmi^{c} ^{c}ilm al-nujūm wa-uṣūl al-ḥarakāt al-samāwīya

herausgegeben als *Elementa Astronomica*
mit lateinischer Übersetzung

von

JACOB GOLIUS

Nachdruck der Ausgabe Amsterdam 1669

herausgegeben von

Fuat Sezgin

1986

Institut für Geschichte der Arabisch-Islamischen Wissenschaften
an der Johann Wolfgang Goethe Universität
Frankfurt am Main

Jawāmi' 'Ilm al-Nujūm wa-usūl al-harakāt al-samāwiya, s. 5-7,
1886 (FRANKFURT)
Not: Bu kitap Ans. Kit. de'dir.

Editor's Preface

The book *Jawāmi^{c} ^{c}ilm al-nujūm wa-uṣūl al-ḥarakāt al-samāwīya* ("Compendium of Astronomy and Principles of the Celestial Motions") by Aḥmad ibn Muḥammad ibn Kathīr al-Farghānī is the earliest completely extant Arabic presentation of the Ptolemaic planetary system. We know nothing about the life of the author beyond what may be inferred from his writings, namely that he was one of the Abbasid astronomers working in Baghdad, and that his work was composed between 218 H/833 A.D. and 247 H/861 A.D.[1] His book is correctly regarded as an abridged version of Ptolemy's Almagest, details being omitted as well as the mathematical discussion. In spite of its modest aim, modern research is well aware of the fact that this book marks the beginning of the period during which Arab astronomers introduced new elements into the science of astronomy, and exhibited an attitude of healthy scepticism and caution toward the contents of Ptolemy's works. However, the wide renown of al-Farghānī does not depend upon these elements, which perhaps make understandable the development of the material Arab and Muslim astronomers had received from their predecessors in that early period. Rather his fame results from his great influence upon those in the Latin world who occupied themselves with this science. It is well known that al-Farghānī's book was neither among the first translated into Latin, nor was it the most important of the Arabic astronomical works which were translated. Nevertheless it became famous and exerted influence, preparing the ground for the assimilation of developments made by Arabic astronomy.

In about 1134 Johannes Hispalensis translated the book into Latin, and about half a century later Gerard of Cremona made a second translation. This was followed by a Hebrew version made by Jacob Anatoli, and an additional Latin translation by Jacob Christmann which depended upon the Hebrew as well as the previous Latin translations.

ҳоли келтирилади. А. и. С. бу асарини форс-тожик тилида ёзган. Кейинчалик Муҳаммад Ниёз Кошғарий томонидан туркий тилга таржима қилинган. Асарнинг форс-тожик тилидаги асл нусхасидан ва туркий тилга қилинган таржимасидан кўчирилиб, бизгача етиб келган 5 та қўл ёзма нусхаси ЎзССР ФА Шарқшунослик ин-тида сақланмоқда.

АҲМАД ИБН ТУЛУН Абулъаббос أحمد بن طولون أبو العباس (835—883) — Мисрда ҳукмронлик қилган ибн Тулун амирларининг биринчиси. А. и. Т. ёшлигида Бағдод халифасида хизмат қилади. 869 йилдан бошлаб Мисрнинг муваққат волийси вазифасини бажаради. Қайнатаси Мўжур Миср волийси қилиб тайинлангандан сўнг (870 й.), бутун Мисрни идора қилиш иши А. и. Т. қўлига ўтади. Шундан кейин у мустақиллик учун кураша бориб, 877 й. Шомни босиб олади. Шу тариқа 200 000 дан ортиқ аскари бўлган мустақил давлат тузади. Миср ва Шом 904 йилгача А. и. Т. асос солган сулола ҳукмронлигида бўлади. 26 й. давлатни идора қилган А. и. Т. ҳукмронликни ўз қўлида сақлаб қолиш учун кўп қон тўкди, лекин қурилиш ва ободончилик ишига анча аҳамият берди. Қоҳира шаҳри чеккасида у қурдирган катта Жомеъ, кўркам сарой ва бемористон (касалхона) ҳозирги кунгача сақланиб қолган.

АҲМАД МИДҲАТ (1844—1913) — турк ёзувчиси, маърифатпарвари, турк адабиётида кичик ҳикоя ва романчиликнинг асосчиси. Илк ҳикоялар тўплами («Қиссадан ҳисса») 1870 йилда босилган. 1868 йилда Бағдодда, 1871 йилда Истамбулда босмахона ташкил этиб, газета ва журналлар чиқарган. Оппозицион руҳдаги мақолалари учун Родос оролига сургун қилинган (1873—76). 1888 йилда шарқшуносларнинг Стокгольмдаги конгрессида Туркиядан вакил бўлиб қатнашди. Тарих, фалсафа, дин, география ва бошқа фанларга оид салмоқли асарлар яратди. Айниқса романлари машҳур. «Дунёга иккинчи келиш» (1874), «Ҳасан Мелллоҳ» (1874), «Ҳусайн Фаллоҳ» (1875), «Парижда бир турк» (1876), «Раққоса» (1877), «Адмирал Бинг» (1881), «Дурдона хоним» (1882), «Дипломли қиз» (1889), «Ёш турк» (1908) ва б. Аҳ. М. француз ёзувчилари асарларини турк тилига таржима этишда ҳам катта ишлар қилди, ижодида романтизм, реализм, натурализм каби ҳар хил адабий йўналишларнинг таъсири бор.

АҲМАД ПОЛВОН, Аҳмад Толиббой (1865—1914) — ўзбек курашчиси. Туркистоннинг турли жойларида (мас., Фарғона водийси ва Тошкент воҳасида) кураш тушган, «кураги ерга тегмаган». Мас., у 1895 йилда рус подшосининг полвони Риппелни ҳам енган. А. табиатан вазмин, камтар бўлган, миллий кураш қонун-қоидаларига қатъий риоя қилган.

АҲМАД ПОШО أحمد پاشا (1497 йилда вафот этган) — турк шоири. А. П. вазир ҳам бўлган. А. П. Навоийнинг 33 ғазалига назира боғлаган. «Сарой қасидаси», «Карам қасидаси» ва «Қуёш қасидаси» каби асарлари бор.

АҲМАД САРДОР — «Гўрўғли» достонларидаги Гўрўғлининг тоғаси, феодал ҳукмронликни ҳимоя этувчи, халқ манфаати йўлида курашувчи Чамбил ботирларига қарши ҳасадчи ва тадбиркорлик б-н ўч олувчи салбий образ.

АҲМАД СУҲАЙЛИЙ Амир Низомуддин أحمد سهيلي، امير نظام الدين (1512 йилда вафот этган) — хуросонлик шоир. Ўзбек ва форс тилларида шеърлар ёзган. Тахаллуси Суҳайлий, баъзи ўринларда Шайх Низомуддин деб юритилади. Алишер Навоийнинг «Мажолисун-нафоис» асарида тилга олинади. Ҳусайн Бойқаро хизматида бўлган. Бу давр шоир ижодининг энг гуллаган ва Алишер Навоий б-н ҳамсуҳбат бўлган дамларига тўғри келади. Шоир *Ҳусайн Воиз* «Анвори Суҳайлий» («Калила ва Димна») китобини А. С.га бағишлайди. А. С. «Ийдия» номли қасида, «Лайли ва Мажнун» номли маснавий ҳамда ўзбекча ва форсча иккита девоннинг муаллифи.

АҲМАД ТАБИБИЙ (1869—1911, Хива) — ўзбек шоири, таржимон. Хива хони Муҳаммад Раҳим II саройида табиб бўлиб хизмат қилган. «Мунис ул-ушшоқ» («Ошиқлар ҳамдами»), «Ҳайратул-ошиқин» («Ошиқларнинг ҳайратланиши»), «Туҳфат ус-султон» («Султон туҳфаси), «Миръотул-ишқ» («Севги кўзгуси»), «Мазҳар ул-иштиёқ» («Иштиёқнинг кўриниши») номли бешта девон тузиб қолдирди. Булардан 2 таси форс тилида, 3 таси ўзбек тилида. А. Т. ғазалларида реал ҳаёт гўзаллигини, ҳақиқий инсоний муҳаббатни, ижтимоий мавзуда ёзган шеърларида эса ахлоқ, маърифат ғояларини куйлади. «Вомиқ ва Азро» достонини ва Фузулийнинг «Ҳафт жом» асарини форс тилидан ўзбек тилига таржима қилди. Унинг «Мажмуат уш-шуаро» (1910) тазкираси эса Хоразм адабий муҳитини ўрганишда муҳим манбалардан ҳисобланади. Шоирнинг ҳамма адабий мероси ЎзФА Шарқшунослик ин-тида сақланади.

АҲМАД ФАРҒОНИЙ Абулъаббос ибн Муҳаммад ибн Касир أحمد فرغانى ابو العباس بن محمدبن كثير (861 йилда вафот этган) — буюк астроном, математик ва географ. Шарқда «Ҳосиб» (математик) деган лақаб б-н шуҳрат топган. Астрономия, геогр. ва математика соҳасидаги асарлари бу фанлар тараққиётига салмоқли ҳисса қўшди ва кейинги даврларда ўтган олимлар учун қўлланма бўлди. «Араб астрономлари ва математиклари» номи б-н шуҳрат қозонган ўзбек олимлари, жумладан А. Ф. асарлари 11-асрдан бошлаб Испанияда латин тилига таржима қилина бошлади. Бу таржималардан у Европада Alfraganus (ал-Фарғоний) номи б-н машҳур бўлди. А. Ф.нинг Фарғонадан Бағдодга қачон ва неча ёшида чиқиб кетганлиги маълум эмас. Араб халифалиги даврида юнон илмий асарларига, айниқса уларнинг таржимасига қизиқиш Ҳорун ар-Рашид (786—809) ва унинг ўғли ал-Маъмун (813—833) халифалиги даврида кучая бошлади. Ҳорун ар-Рашид таржимон ва олимлар уйи «Билим уйи» («Ҳизонат ул-Ҳикма» ёки бошқача номи «Байт ул-Ҳикма») ни қурдирди. Шу даврларда Бағдод илмий таржима ишларининг марказига айланди. Таржима ишларида турли мамлакатлар, турли миллат вакиллари қатнашдилар, улар орасида Ўрта осиёлик А. Ф. б-н бирга Муҳаммад *Хоразмий*, Аббос ибн Саъид *Жавҳарий* ва Аҳмад ибн Абдуллоҳ *Марвазийлар* ҳам бор эди. А. Ф ўз дўстлари — Ўрта осиёлик олимлар б-н биргаликда мураккаб чет

Sept, October 1997
Didar Bayir

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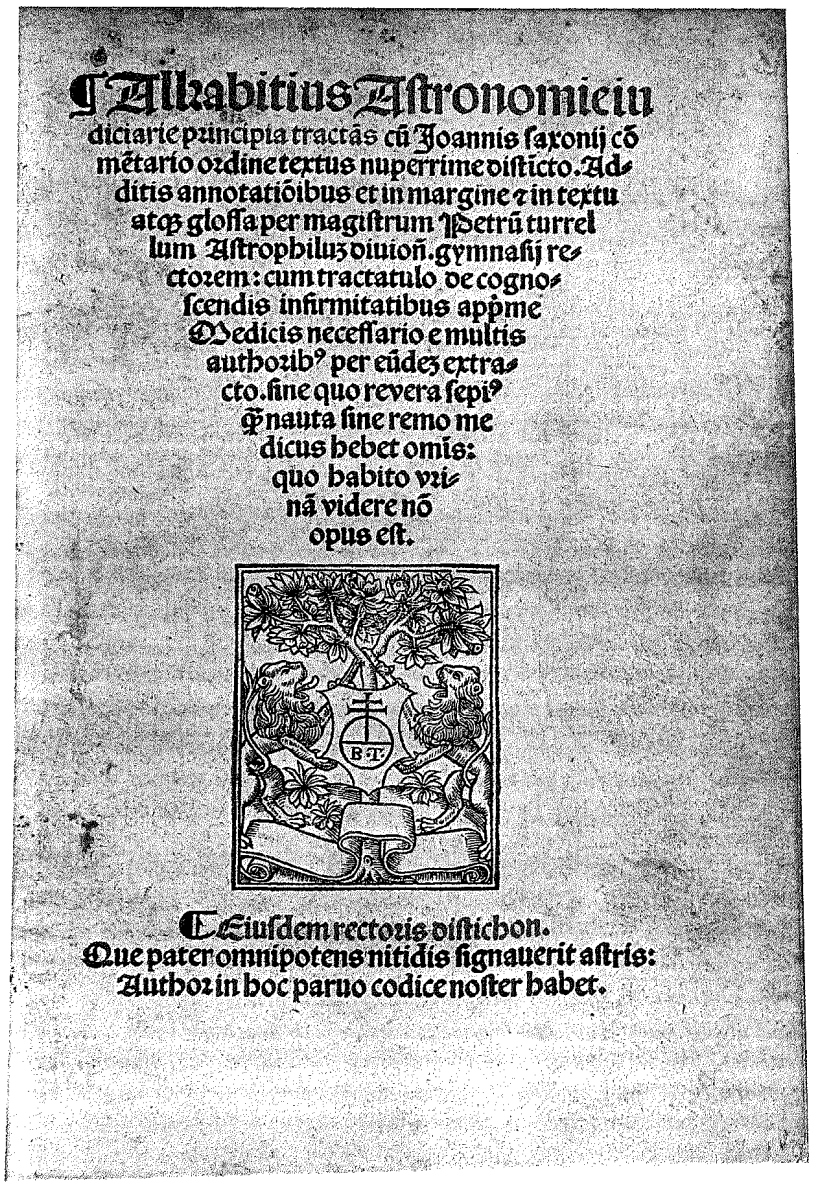
¶ Alkabitius Astronomicu
diciarie pncipia tractās cū Joannis saxonij cō
mētario ordine textus nuperrime distincto. Ad-
ditis annotatiōibus et in margine ⁊ in textu
atq; glossa per magistrum Petrū turrel
lum Astrophiluz diuioñ. gymnasij re-
ctorem: cum tractatulo de cogno-
scendis infirmitatibus appme
Medicis necessario e multis
authoriby per eūdez extra-
cto. fine quo revera sepi?
¶ nauta sine remo me
dicus hebet omis:
quo habito vri-
nā videre nō
opus est.
¶ Eiusdem rectoris distichon.
Que pater omnipotens nitidis signauerit astris:
Author in hoc paruo codice noster habet.

[10]

10 ALCABITIUS. Astronomie iudicarie principia tractatus cum Johannis Saxonii commentario ordine textus nuperrime distincto. Additis annotationibus et in margine et in textu atque glossa per Petrum Turrel … cum tractatulo do cognoscendis infirmitatibus. [Colophon:] Lyons, Guillaume Huyon for Bartélemi Trot, [between 1519 and 1523].

8vo, title printed in red and black and with woodcut printer's device, with six woodcut astronomical diagrams in text, woodcut initials throughout; slight browning; red morocco, gilt panelled sides, by R.R. Luna of Madrid.

An attractively printed edition. The chapter on astrological influences on medicine by the French philosopher and astrologer Petrus Turrellus appears here for the first time. The publisher, Bartélemi Trot, was a Croat who arrived in Lyons in 1491. He specialised in pirated editions of the Aldine classics and used various printers, among them Guillaume Huyon.

Baudrier VIII p. 415; BMSTC French Books p. 1; Carmody p. 146; IA 102.860; Houzeau & Lancaster 3847; NUC records two locations, University of Wisconsin, and Columbia University, New York.

ابو العباس احمد بن محمد بن كثير الفرغاني

Abu 'l-ʿAbbās Aḥmad ibn Muḥammad ibn Kathīr
AL-FARGHĀNĪ *known as* **ALFRAGANUS**

A major figure in the history of Islamic astronomy, al-Farghānī lived during the reigns of the Abbasid Caliphs al-Ma'mūn and al-Mutawakkil and is said to have worked on the construction of a Nilometer at Fustat. He wrote a number of works on the astrolabe, but his best known text, which survives in Arabic manuscript copies in Oxford, Paris, Cairo, and Princeton University, is a non-mathematical account of Ptolemaic astronomy called *Kitāb Jawāmiʿ ʿilm al-nujūm wa-uṣūl al-ḥarakāt al-samāwīya* ('The Elements'). It was commented upon by Abu 'l-Ṣaqr al-Qabīṣī; and translated to Latin by Johannes Hispalensis and also by Gerard of Cremona.

11 ALFRAGANUS. Chronologica et astronomica elementa, e Palatinae bibliothecae veteribus libris versa, expleta, & scholiis expolita. Additus est commentarius … Autore M. Iacobo Christmanno. Frankfurt, heirs of Andrea Wechel, 1590.

A BIBLIOGRAPHY

OF

SCHOLARS

IN MEDIEVAL ISLAM

150 - 1000 A.H
(750 – 1600 A.D)

Ilias Fernini, Ph.D.
Faculty of Science
United Arab Emirates University

"The Perfect City" . In this treatise, al-Fārābī arrived at the conclusion that the perfectly organized state ought to cover all the inhabited world and comprise the whole of humanity. This work is considered as a significant contribution to sociology and political science.

(23) *"Al-Siyasa al-Madaniya"* (On Politics).

(24) *"Kitāb al-Mūsīqā al-Kabīr"* (The Great Book of Music). This book was written at the request of Abū Ja'far al Karkhī, who became vizier in 936. It is a book on musical history, theory, and practice. It is considered as the greatest Arabic treatise on music, and in it Al-Fārābī not only demonstrates his mastery over the corpus inherited from the Greeks, but also justifies his reputation as an executant musician by giving a comprehensive account of some of the main features of contemporary practice. The main theoretical section of the work begins with the physics of sound which is similar to Aristotle. There follows definitions of the basic elements of note, pitch, and interval, and then a detailed exposition of various tetrachord species (diatonic, chromatic, and enharmonic) not all of which are taken from Greek theorists; and of the structure of the Greek two-octave Greater Perfect System. This theoretical section concludes with a highly abstract analysis of rhythm based upon the concept of the *"chronos protos"*.

From all of his works, al-Fārābī distinguished himself by his writings on natural sciences which are considered to be polemical: against Galen's interpretations of Aristotle's views on the parts of animals; against John Philoponus' criticism of Aristotle's views on the eternity of the world and movement; against the physician al-Rāzī's views on matter, time, place, and atoms; against the theologian Ibn al-Rawandi's account of dialectic, which was the method used by the theologians in general concerning atoms and vacuum; and finally against the scientific claims of astrology and alchemy. Al-Fārābī's intention was not primarily to defend the doctrines of Aristotle against his critics, but rather to clarify the question at issue, to ascertain the assumptions, coherence, and relevance of the arguments against Aristotle's natural science, and to

determine whether they are based on genuine differences between Aristotle and his opponents or merely on a misunderstanding of Aristotle, over confidence in the theoretical implications of certain experiments, or eagerness to support a religious doctrine.

FARAḌĪ (Ibn al-Faraḍī)

Abū-l-Walīd ʿAbdallāh ibn Muḥammad ibn Yūsuf ibn Naṣr al-Azdī ibn al-Faraḍī
b. in Córdoba in 962-63 A.D; d. in Córdoba in 1013 A.D

Historian - Ibn al-Faraḍī[138,139] made the pilgrimage in 992-93 and was the Cādī of Valencia in 1009-10. He was killed during the sack of Córdoba by the berbers in April 21, 1013. Ibn al-Faraḍī's main work is *"Ta'rikh ʿUlamā' al-Andalus"* (History of the Learned Men of Andalusia). This biography was continued by Ibn Bashkuwāl (q.v., first half of twelfth century).

FARGHĀNĪ (al-Farghānī)

Abū'l ʿAbbās Aḥmad Ibn Muḥammad Ibn Kathīr al-Farghānī
b. in Farghāna; d. in Egypt after 247 A.H (861 A.D)

Astronomer - Al-Farghānī[140,141] is known the West as Alfraganus. He was one of the astronomer in the House of Wisdom founded by the 'Abbāsid Caliph al-Ma'mūn (813-833). It is reported that he worked as a supervisor in the construction of the Great Nilometer (*al-miqyās al-kabīr*) at al-Fusṭāṭ for the Caliph al-Mutawakil who ordered its construction.

[138] Ben Cheneb, p. 762
[139] Sarton, p. 734
[140] Al-Farghānī, The Fihrist of al-Nadīm, p. 660
[141] Sarton, p. 567

even if they are only shadowy figures vaguely quoted in disparate sources. The full commitment and strong scholarly background of J. Lirola and J.M. Puerta Vílchez (originators of the idea and directors of the project) mean that volumes appear at a good pace, so that the whole work will hopefully be available in four or five years, which, in comparison with the second English edition of the *Encyclopaedia of Islam*, is splendid news.

Obviously, it is not usual policy to start an encyclopaedia with the third volume as in this case. The *Biblioteca de al-Andalus* has had its particular history in which not only the complex coordination of a large number of contributors was involved. Originating with another title and publisher, its development was halted after the publication of the first volume in 2002, reviewed by M. Marín in *Suhayl* 4. Only two years later, the project reappeared with its aims strengthened, its contents improved, and its physical aspect renovated. The bio-bibliographical studies have been revised and often expanded, and a number of new Andalusī authors have been incorporated, as well as illustrative texts, maps, plates, and genealogical trees. In general, with regard to the disciplines developed by a given author, well-balanced information is to be found within each biography, since the directors have done their best to commission particular sections of each entry to specialized scholars. This reference work, a true encyclopaedia in its own right, will also be helpful to avoid the confusion amongst figures of similar names or amongst members of long-standing families, since specific entries have been devoted to each person and the onomastic chain carefully noted. Multiple indexes (of biographies, of authors' *nisba*, *nasab*, *laqab*, and *shuhra*, of places, work titles, subject-matter, genealogical trees, illustrations, and even of contributors) facilitates the location of entries in each volume.

Many entries constitute virtual monographs on Andalusī authors who, even if known and studied for many years, have seldom deserved such a systematic and comprehensive bio-bibliographical approach in any reference work. This is particularly important with regard to Andalusī science and medicine, since works such as the *Dictionary of Scientific Biography* (ed. by Ch. C. Gillispie, 10 vols. New York: Charles Scribner's Sons, 1981), the *Medieval Science, Technology and Medicine: An Encyclopaedia*, (ed. by T. Glick, F. Wallis, S. Livesey. London and New York: Routledge, 2005), or the forthcoming *Dictionary of Medical Biography* (ed. by W.F. and H. Bynum in 5 vols.), however useful, do not include as many Andalusī scientists, and its bio-bibliographical studies are not as exhaustive as in the work under discussion. This aspect becomes evident when we look at the number and names of the Andalusī scholars who specialized in -or wrote treatises on- scientific matters (medicine, pharmacology, dietetics, astronomy, astrology, mathematics, arithmetic, veterinary medicine, etc...). In the third volume, they are the following: Abū Muḥammad Ibn al-Dhahabī, Abū Bakr Ibn al-Farrā', Aḥmad b. Fāris al-Munajjim, Abū l-Walīd b. al-Fatḥ, Abu Isḥāq b. Fattūḥ, Manāḥim b. al-Fawwāl, 'Abbās b. Firnās, Ibn Galinduh, Marwān b. Gazwān, 'Abd al-Malik b. Ḥabīb, Abū l-Taqī b. Ḥadram, Ibn al-Hā'im, Ibn al-Hannāṭ, Isḥāq b. al-Ḥasan al-Zayyāt, Abū l-Faḍl b. Ḥasdāy al-Saraqusṭī, Abū Ja'far Ibn Ḥasdāy, Abū l-'Alā' b. Ḥassān al-Quḍā'ī, Abu Ja'far b. Ḥassān al-Quḍā'ī, 'Abd al-Raḥmān b. al-Haytham, al-Ḥusayn b. Ḥayy, Yaḥyā b. al-Ḥājj al-Ma'āfirī, Ibn Ḥajjāj, Ibn Ḥazm al-Qurṭubī, Ibn Hishām al-Lakhmī, Ibn Hudhayl, Ibn Idrīs al-Qalalūsī, Yaḥyā b. Isḥāq, Ibn Isḥāq al-Ya'murī, Ibn Khalaf al-Istijī, Ibn Khalaf al-Murādī, Ibn Khalaf al-Ṣaydalānī, Ibn Khalaf al-Umawī, Abū 'Umar b. Khalīl al-Sakūnī, Muḥammad b. Khalṣūn, Ibn al-Khaṭīb, Ibn Khātima, Abū Bakr 'Azīz b. al-Khaṭṭāb, Abū Bakr Ibn al-Khayyāṭ, Ibn al-Kammād, and Abū 'Abd Allāh Ibn al-Kattānī. With regard to the fourth volume, the Andalusī authors to be found are: Ibn al-Lūnq (Ibn al-Lūnquh), Ibn Luyūn, Abū 'Amr Muḥammad b. Manẓūr, Mūsā b. Maymūn, Ibn Mu'ādh al-Jayyānī, Ibn al-Mu'allim al-Yahūdī, Ibn Mun'im al-'Abdarī, Abū 'Abd Allāh b. al-Munāṣif, Ibn Muraṭayr, Abū Bakr b. al-Murkhī, Abū 'Imrān Ibn Mūsā, Ibn Mūsā al-Ilbīrī, Ibn Muṭarrif al-Qaṭṭān, 'Abbās b. Nāṣiḥ, Aḥmad b. Naṣr, Abū l-Qāsim b. Qarlumān, Ibn Qasṭār, Ibn al-Qaṭṭān, Ibn al-Raqqām, Ibn Rashīq al-Taghlibī, Ibn Razīn al-Tujībī, Abū Bakr b. Rifā'a, Khālid b. Rūmān, Ibn al-Rūmiyya, Abū l-Walīd b. Rushd al-Ḥafīd, and his son Abū Muḥammad 'Abd Allāh b. Abī l-Walīd b. Rushd.

Once the *Biblioteca de al-Andalus* is completed, a whole picture of Andalusī culture and -for what we are concerned here- Andalusi science will, for the first time, be available to a much wider audience in the academic community, both to specialists in medieval Islamic science and Muslim Spain, within and abroad Spanish borders. The author of this review endorses M. Marin's words about the great service done by Jorge Lirola and José Miguel Puerta to the scientific community, not only with their own contribution as editors and coordinators of this ambitious collective project, but also as originators of an endeavour which certainly deserves to become as indispensable and authoritative as other well-known reference works.

Cristina Álvarez Millán

Richard Lorch, *Al-Farghānī, On the Astrolabe. Arabic Text Edited with Translation and Commentary by ...*
Munich, Franz Steiner Verlag, 2005.

The book under review presents the first known description of the construction of the astrolabe produced in Arabic, namely the text written around 856-857 AD by al-Farghānī, known as *al-Kāmil*. The author of the edition, translation and study of this text is a specialist on the field who has produced a number of excellent studies on this topic, including the one carried out together with Kennedy and Kunitzsch on the melon-shaped astrolabe, a particular variant of the same instrument.

Al-Farghānī's *al-Kāmil* has raised the interest of several specialists. F. Charette studied the tables included in the treatise ("Al- Farghānī's Tables for Constructing Astrolabes" *Jubilee Symposium on al-Farghānī,* Uzbek Academy of Sciences, Samarqand and Fergana, Uzbekistan, September 1998), although his study is still unpublished, and Lorch presented an overview of the contents of this treatise at the *7th Maghribi Colloquium on the History of Arabic Mathematics* held in Marrakech in 2002 (Cf. R. Lorch, "Al-Farghānī's Treatise on the Astrolabe" *Actes du 7ème Colloque Maghrébin sur l'Histoire des Mathématiques Arabes*. Marrakech, 2005. vol. I pp. 263-270).

The importance of this treatise is that it seems to be the first of this kind. In the introduction to his *al-Kāmil,* al-Farghānī says that, although some scholars had provided guidelines for making the astrolabe, nobody before him had laid down the principles of construction and use of the instrument in a book. Al-Farghānī's aim in *al-Kāmil* was to describe the theoretical basis of the instrument as well as the practical details.

The book starts giving information on the characteristics of the astrolabe, and on al-Farghānī's life and works and, especially, on the treatise under study here, *al-Kāmil.* We also find information on the vocabulary used by al- Farghānī in the text and the value ascribed by him to the obliquity of the ecliptic ($\varepsilon = 23;33^{\circ}$), probably taken from Yaḥyā ibn Abī Manṣūr, and the precession of the equinoxes that seems to be of 1° in 100 years, following Ptolemy's value. Finally some information is given on two texts based on *al-Kāmil:* an anonymous sum-

2. A. b. M. *b. Kaṯīr al-Fargānī.*

al-Qifṭī 78, K. 56, sein Vater eb. 286 (den nach b. Taġr. K. II, 311, 2, al-Mutawakkil zur Beaufsichtigung des Nilmessers nach Ägypten schickte) [1], b. Ṣāʿid, *Ṭab.* 86, Suter No. 39. 1. *K. fī Ǧawāmiʿ ʿilm an-nuǧūm wa Uṣūl al-ḥarakāt as-samāwīya* oder *K. ʿIlal al-aflāk* noch Paris 2504_{3}, Kairo[1] V, 310, Princ. 135; zu den hebr. Überss. s. Steinschneider, S. 554/5, zu den lat. Wüstenfeld, die Üb. ar. Werke ins Lat. 26, 63, Steinschn. die europ. Üb. a. d. Arab. I, 22, Ellis I, 194, s. Alfragano, Il Libro delle aggregazioni delle stelle secondo il codice Med. Laur. pl. 29, cod. 9. contemporaneo a Dante, pubbl. con introd. e note da Romeo Campani, Città di Castello 1910, s. Campani, RSO III, 205—52. 2. oder 3. eine Schrift über das Astrolab Br. Mus. Or. 5479 (DL 39). 4. *R. al-Fuṣūl Mudḫal fī Miǧisṭī wahwa ṯalāṯūna faṣlan* AS 2843_{12}. 5. *R. fī maʿrifat al-auqāt allatī yakūn al-qamar fīhā fauq al-arḍ au taḥtahā* Kairo[1] V, 311. 6. *Ḥisāb al-aqālīm as-sabʿa* eb. ist vielleicht das Werk, zu dessen Tabellen A. b. M. al-Mīqātī eine *Tatimma* schrieb, von der ein Blatt Gotha 1523 erhalten ist. — Auf seinen Tafeln beruht *R. Muḫtaṣara fī maʿrifat tafaṣṣul ar-rubʿ warasmihī bil-muqanṭarāt aš-šamālīya* v. M. b. ʿAṭīya b. ʿAbdalḥaqq b. Ẓuhaira al-Ḥanbalī, Vat. V. Borg. 105, 2.

1) Also könnte sein Sohn nicht, wie gewöhnlich angenommen wird, schon unter al-Maʾmūn gewirkt haben; doch berichtet b. a. Uṣ. I, 207, 28, dasselbe von A. b. K. al-F. und der *Fihr.* 279 nennt den grossen Astronomen. M. Christmann, M. alfr. Chronologica, Francoforti 1590, S. 124, schliesst aus den astronomischen Daten auf die Zeit um 950.

GAL. Supp. I, s. 392-393, 1937 (LEIDEN)

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2. Gleichzeitig oder etwas später blühte A. b. M. b. Kaṯīr al-Farġānī, über dessen Lebensumstände nichts näheres bekannt ist.

b. a. Uṣaibiʿa I, 207, Mieli § 15,7. 1. *K. fī Ḥarakāt as-samāwīya waġawāmiʿ ʿilm an-nuġūm*, Bodl. I, 879, de Jong, 110 u.d.T. *ʿIlal al-aflāk* (s. Suppl.) noch Garr. 967, u.d.T. *R. al-Fuṣūl Mudḫal fī Miġisṭī wahwa ṭalāṭūna faṣlan* oder *k. al-Haiʾa, al-Fuṣūl aṭ-ṭalāṭīn*, Paris 2504,3, s. Woepcke, JA, s. V, t. 19, S. 114 ff., bes. 120, Hespéris XVIII, 88,5b, Muhammedis(so) Ketiri Ferganensis, qui vulgo Alfraganus dicitur, Elementa astronomica, arabice et latine, cum notis ad res exoticas sive orientales, quae in iis occurrunt, opera Jacobi Golii, Amstelodami 1609, Steinschneider, ZDMG XVIII, 148, hebr. Steinschn. 343. — 2. *al-Kāmil fi 'l-asṭurlāb*, Berl. 5790/2. — 3. *fī Ṣanʿat al-aṣṭurlāb*, eb. 5793, Paris 2546,5, u.d.T. *k. ʿAmal al-aṣṭurlāb*, Rāmpūr I, 428,64b. — 4. *ʿIlm al-haiʾa*, Zāwiyat Sidi Ḥamza, Hesp. XVIII, 88,5b. — 5. *Ǧadwal al-Farġānī* Patna II, 336,2520,8.

GAL. c.I., s. 249, 250, 1943 (LEIDEN)

أحمد الفَرْغَاني (كان حيا قبل ٢١٨ هـ)
(٨٣٣ م)

احمد بن محمد بن كثير الفرغاني (ابو العباس)
احد منجمي المأمون العباسي . من تصانيفه:
المدخل الى علم هيئة الأفلاك وحركات النجوم
(ط) القفطي : تاريخ الحكماء ٧٨
De Slane : Catalogue des manuscrits arabes
5. Brockelmann : G. I : 221, s. I : 392

MLF., c. II., s. 145, 1957 (BEYKUT)

وخلافة المعتضد على الحضرة وأقام أحمد في موضعه ورجا بذلك السلامة وكان قعوده سبباً لمنيته وأمر المعتضد القاسم بأثبات جماعة ممن ينبغى أن يقتلوا ليستريح من تعلق القلب بهم فأثبتهم ووقع المعتضد بقتلهم فأدخل القاسم اسم أحمد فى جملتهم فيما بعد فقتل وسأل عنه المعتضد فذكر له القاسم قتله وأخرج اليه الثبت فلم ينكره ومضى بعد أن بلغ السماء رفعة

وله من الكتب • كتاب قاطيغورياس • كتاب باريرمينياس • كتاب انولوطيقا • كتاب عش الصناعات • كتاب اللهو والملاهي • كتاب السياسة • كتاب المدخل الى صناعة النجوم • كتاب للموسيقى الكبير مقالتان • كتاب الموسيقى الصغير • كتاب المسالك والممالك • كتاب الارثماطيقى والجبر والمقابلة • كتاب المدخل الى الطب • كتاب المسائل • كتاب فضائل بغداد • كتاب الطبيخ • كتاب زاد المسافر • كتاب المدخل الى علم الموسيقى • كتاب الجلساء والمجالسة • كتاب جوابات ثابت • كتاب النمش والكلف • كتاب الشاكين وطريق اعتقادهم • كتاب منفعة الجبال • كتاب وصف مذهب الصابئين • كتاب فى ان المبدعات لا متحركة ولا ساكنة

[أحمد بن محمد بن كثير الفرغانى] أحد منجمي المأمون وصاحب المدخل الي علم هيئة الافلاك وحركات النجوم وهو كتاب لطيف الجرم عظيم الفائدة مضمن ثلاثين باباً احتوت على جوامع كتاب بطلميوس بأعذب لفظ وأبين عبارة

[أحمد بن يوسف المنجم] رجل مشهور في العلم بهذا الشأن فمن تصانيفه • كتاب النسبة والتناسب وله في أحكام النجوم كتاب شرح الثمرة لبطلميوس

[أحمد بن محمد الصاغانى] أبو حامد الاصطرلابى كان فاضلا فى الهندسة وعلم الهيئة يسلم اليه ذلك فى وقته وكان ببغداد يحكم صناعة الاصطرلاب والآلات الرصدية غاية الاحكام وآلاته مذكورة بأيدى أرباب هذا الشأن معروفة في ذلك الزمان وفى هذا الاوان ونسبغ له عدة تلاميذ ينسبون اليه ويفخرون بذلك وله زيادة في الآلات القديمة فاز بها دون غيره من أهل هذا النوع ولما تقدم شرف الدولة بن عضد الدولة ببغداد يرصد الكواكب السبعة واعتمد فى ذلك على ويجن بن رستم الكوهي وبنى بيت الرصد

﴿ الفرغانى ﴾

واسمه محمد بن كثير ، وكان فاضلا منجما مقدما فى صناعته . وله من الكتب :
كتاب الفصول اختيار المجسطى ، كتاب عمل الرخامات

İbnü'n-Nedim, s. 389, 1978 (BEYRUT)

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39. Ahmed[c]) b. Muh. b. Ketîr el-Fargânî, aus Fargâna in Transoxanien gebürtig, einer der Astronomen el-Mâmûns und seiner Nachfolger,[d]) schrieb: Das Buch der Elemente der Astronomie, Auszug aus dem Almagest (auch unter dem Titel: Das Buch über das gesamte astronomische Wissen und die himmlischen Bewegungen). Über die Konstruktion der Sonnenuhren. (Fihr. 279, Übers. 34; C. I. 409 und 432 u. Ibn el-Q.; Abulfar. 248, Übers. 161; Abûlmah. I 742.)

Von seinen Werken ist das erstgenannte noch vorhanden in Oxford (I. 879, 1⁰), in Paris (2504, 3⁰) und in Kairo (310, Übers. 170). Herausgegeben wurde dasselbe lateinisch von Melanchthon aus dem Nachlasse Regiomontans, Nürnberg 1537, und von Jakob Christmann, Frankfurt 1590, arabisch und lateinisch von Golius, Amsterdam 1669. Mss. der ältern lateinischen Übersetzungen von Joh. Hispalensis und Gerard von Cremona existieren in beträchtlicher Zahl (vergl. Wüstenfeld, die Übersetzungen arabischer Werke in das Lateinische etc. p. 26 und 63). — Aufser den oben genannten Werken werden ihm noch zugeschrieben: Über die Konstruktion des Astrolabiums, in Berlin (5790—93)[a]) und Paris (2546, 5⁰). Über die Berechnung (?) der sieben Klimata, unvollständig, vielleicht nur ein Teil aus seinen Elementen der Astronomie, in Kairo (311, Übers. 170).

[c]) Abulfar. hat „Ahmed b. Muh.", der Fihr. nur „Muh." Ibn el-Q. macht zwei Personen aus der einen, was höchst wahrscheinlich unrichtig ist, ihm folgt auch Flügel: Dissertat. de arab. scriptor. graecor. interpret., 1841, p. 29 und 34.

[d]) Abûlmah. I. 742 schreibt, er sei von el-Mutawakkil (232—247) zur Beaufsichtigung des Baues eines Nilmessers im J. 247 (?) nach Fostât geschickt worden.

[a]) Das Ms. 5793 ist von den drei ersten etwas verschieden, obgleich es ungefähr denselben Titel trägt; mit welchem von diesen das Pariser Ms. identisch ist, kann ich nicht angeben.

SUTER, S. 18-19, 1900 (LEIPZIG)

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AḤMAD AL-FARGHĀNĪ AND HIS *COMPENDIUM OF ASTRONOMY*

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Abū l-'Abbās Aḥmad b. Muḥammad b. Kathīr al-Farghānī (Alfraganus in Latin) was a major figure among the early medieval astronomers, mathematicians, and geographers. Through his works he played an important role in transmitting Islamic scientific knowledge to the West. In this article I have tried to establish some facts about al-Farghānī's life and works, as little information about him has been preserved in the medieval sources.[1] I have also included an introduction to one of his main astronomical works, the *Compendium of Astronomy and the Principles of Celestial Motions* (*Jawāmi' 'ilm al-nujūm wa-uṣūl al-ḥarakāt al-samāwiyya*), which has not yet been fully translated into any modern language. In the modern scientific literature this work by al-Farghānī is also known as the *Elements of Astronomy*.

Al-Farghānī's scientific reputation and scholarly endeavours are acknowledged by Fuat Sezgin, who quotes from the French scholar Pierre Duhem:

> Everything which Robert Grosseteste, a leading figure in the thirteenth-century Aristotelian school of Paris, attributed to Ptolemy in his *Summa Philosophiae* was in fact taken from al-Farghānī. We note further that the Italian astronomers from the thirteenth until the beginning of the fourteenth century depended completely upon the book of al-Farghānī when they referred to Ptolemy. This is the case, for instance, with Ristoro d'Arezzo and his *Della composizione del mondo*. All of his ideas are from the book of al-Farghānī, in spite of the fact that he refers to Ptolemy without having any acquaintance with the *Almagest*. Similar facts are known concerning the influence of al-Farghānī upon the famous Italian poet Dante Alighieri, who also obtained all the Ptolemaic astronomical ideas in his *II convivo* from the book of al-Farghānī. Finally, I mention that Regiomontanus, the famous Renaissance scholar, delivered lectures in Padua in 1464 based on al-Farghānī's book.[2]

[1] Biographical and bibliographical data on al-Farghānī are given by A. I. Sabra, 'al-Farghānī', *Dictionary of Scientific Biography* (New York, 1971), vol. 4, pp. 541–5. See also G. Sarton, *Introduction to the History of Science* (Baltimore, MD, 1927), vol. 1, p. 567. For lists of his works and available manuscripts, see F. Sezgin, *Geshichte des arabischen Schrifttums* (Leiden, 1974), Band V, pp. 259–60; Band VI, pp. 149–51.

Although al-Farghānī is well known in the history of medieval science, the available information on his life and scientific activity is very limited and often contradictory; even his full name and dates of birth and death are uncertain. His last name, al-Farghānī, establishes a link with Farghana and shows that it is quite likely that he was born there.[3]

According to A. Ahmedov's calculation, al-Farghānī was probably born in the year AD 797–8, a suggestion which he justifies as follows:

> If we accept that the caliph al-Ma'mūn shifted his court from Merv to Baghdad in AD 819, and if we assume that Aḥmad al-Farghānī was one of the scholars who followed al-Ma'mūn to his new capital in Baghdad, the age of al-Farghānī, at that time, might be between 20 and 25 years. This age seems likely, as al-Farghānī must have needed 20–25 years for his primary education and to become a scholar. The latest reference to al-Farghānī mentions that he was alive in 861. It is possible that he did not live long after this date and died sometime in 865. If we assume that Aḥmad al-Farghānī was in his mid-twenties in 819, and that he died sometime in 865 at the age of 67 or 68, then we would probably be right in assuming that he was born in 797 or 798.[4]

We may therefore suggest that the 1200th anniversary of the birth of Aḥmad al-Farghānī occurred in the year 1997 or 1998.

Several medieval Arabic sources contain information on al-Farghānī and his works. For example, Ibn an-Nadīm (d.993) in his *al-Fihrist* mentions that 'his name was Aḥmad b. Muḥammad b. Kathīr. He was a distinguished man and a leading astrologer. Among his works were *Selections (Chapters) from the Almagest* and *The Construction of Sundials*.'[5]

Ibn al-Qifṭī (1173–1248) believes that Aḥmad b. Muḥammad b. Kathīr al-Farghānī was one of al-Ma'mūn's astronomers and that he wrote *Introduction to the Science of Astronomy and Motions of the Stars* (*Al-madkhal ilā 'ilm hay'at al-aflāk wa-ḥarakāt al-nujūm*). According to Ibn al-Qifṭī, this useful work, consisting of 30 chapters, presents a compendium of Ptolemy's *Almagest* in a pleasant style and with clear

[2] F. Sezgin, *Aḥmad b. Muḥammad b. Kathīr al-Farghānī: Jawami' 'ilm al-nujūm wa uṣūl al-ḥarakāt al-samāwīya* (Frankfurt, 1986), vi.

[3] The valley of Farghana, with an area of 300 km by 22,000 km, is mostly situated in Uzbekistan and surrounded by parts of the Tian-shan mountains to the north and the Hisar-Alay mountains to the south. Some parts of the valley are situated in modern-day Kyrgyzstan and Tajikistan.

[4] A.A. Ahmedov, 'Aḥmad al-Farghāni', in M. M. Khairullaev (ed.), *Buyuk siymolar, allomalar* (*Outstanding Figures, Scholars*) (Tashkent, 1995), vol. 1, p. 18 (in Uzbek).

[5] B. Dodge (ed. and tr.), *The Fihrist of al-Nadīm. A Tenth-Century Survey of Muslim Culture* (New York and London, 1970), vol. 2, p. 660.

ayrımı gerektirir. Bilen ve bilinen, parça ve bütün arasındaki ayrım ise başlangıçtan itibaren bizim kurtulmaya çalıştığımız bir düalizmdir.

Gerçekliğin tam anlamıyla bilinemeyeceği ya da düşünülemeyeceği tezi, düşüncemizin tüm kategorilerinin Gerçekliğe ait olduğunu söyleyemeyeceğimiz tutarsızlıklar, çelişkiler ortaya koyduklarını göstermek suretiyle savunulmuştur. Bu sebeple, Bradley felsefesinde, gerçekliğin bütünü düşünce açısından sürekli olarak bir başkası olarak kalacaktır.

Unat, Yavuz: "al-Fargânî'nin Kitâb el-Fuşûl Adlı Astronomi Eseri Üzerine Bir Araştırma", Doktora Tezi, (Danışman: Prof. Dr. Esin Kâhya) iii+450 s.

Batı'da Alfraganus olarak bilinen Fergânî, Memûn zamanının önemli astronomlarından biridir. Astronomiye ilişkin yazmış olduğu Astronominin Özeti ve Göğün Hareketlerinin Esasları (Cevâmi 'Ilm el-Nucûm ve Usûl el-Harekât el-Semâviye, Kitâb el-Fusûl el-Mudhal fi Mecistî, Elements of Astronomy) adlı kitabı, Batı'da ve Doğu'da bu alandaki en önemi kitaplardan biridir ve onbeşinci yüzyıla kadar bir başvuru kitabı olarak kullanılmıştır.

Eser, yaklaşık 833 yıllarında kaleme alınmıştır. Batlamyus'un Almagest adlı astronomi eserinin bir özeti niteliğindedir ve otuz bölümden oluşmaktadır. Ancak eser, Almagest'in özeti olmasına karşın, Almagest'ten farklı bölümler de içermektedir. Fergânî, zamanında yapılmış bazı astronomi çalışmalarını eserinde söz konusu etmektedir. Bu nedenle eser, Almagest'in bir devamı olarak kabul edilebilir. Bu görüş, neden bu eserin, uzun süre Batı'da ve Doğu'da etkin olduğunu da açıklamaktadır.

9. FİZİK VE PALEOANTROPOLOJİ ANABİLİM DALI

YÜKSEK LİSANS 1995

Gençtürk, İnsaf: "Miyosen Hominoidlerinin (Paşalar Kazısı) Çiğneme Dişlerinin Aşınması ve Kontak Yüzeylerinin Morfometrik Analizi", Yüksek Lisans Tezi, (Danışman: Prof. Dr. Berna Alpagut), V+376 s.

Bu çalışmada Orta Miyosen Dönem Paşalar fosil lokalitesinden (Bursa-Mustafakemalpaşa) ele geçen hominoid dişlerinin tanımsal karekterleri belirlenmiş ve molar dişlerin diyete bağlı gösterdiği aşınma dereceleri saptanarak, kriterler oluşturulmuştur. Paşalar izole diş serisinin kendi özel diş aşınma çartı oluşturulmaya çalışılmıştır. 800 adet premolar-molar dişin kontak yüzeylerinin (mesial-distal) birbirleriyle denenmesi sonucunda, diş dizileri olabildiği ölçüden oluşturularak birey sayısı tespit edilmiştir. Bunların ışığında da tartışmalı olan tür yapısına çözüm aranmaya gidilmiştir.

Elde edilen bulguların değerlendirilmesi sonucunda ise aşağıdaki sonuçlara ulaşılmıştır.

1- 563 adet izole molar dişin çiğneme yüzeyi incelenerek, Paşalar fosil hominoidlerine ait aşınma çartı oluşturulmuştur. Oluşturulan bu çartta 16 aşınma grubu tespit edilmiştir.

2- 800 adet premolar ve molar dişin mesial-distal interproximal kontak yüzlerinin birbiriyle denenmesi yapılmış ve 400 dişin kontak yaptığı bu çalışmada 162 tane irili ufaklı çene yarımı yani 162 birey belirlenmiştir.

3- Oluşturulan diş serilerinin genelinde bariz bir şekilde farklı boyutta iki grup tespit edilmiştir. Büyük ve küçük boyuttaki bu iki form arasında büyük boyuta daha yakın, üçüncü bir grup daha belirlenmiştir. Belirlenen bu son grup için, iri forma boyut ve morfolojide göstermiş olduğu benzerlikten dolayı aralarında seksüel dimorfizme ait bir ilişkinin olabileceği şeklinde bir açıklama getirilebilir.

Güney, Hamiyet: "Aşvan Kale ve Panaztepe İskeletlerinde Diş Yapısı" Yüksek Lisans Tezi (Danışman: Prof. Dr. Erksin Güleç).

İnsan vücudunun en kalıcı yapıları kemik ve dişlerdir. Arkeolojik kazılarda elde edilen dişler bireylerin anatomik özellikleri yanında kültürel yapılarının da açığa çıkmasına neden olur. Yapılan araştırma sonuçlarına göre diş aşınması, buğdayla beslenen fakir toplumlarda çok görülürken, yumuşak ve rafine gıdalarla beslenen zengin toplumlarda ise daha az görülmektedir. Diş çürüğü hastalığı ise Neolitik Dönemi'nden itibaren ortaya çıkmıştır. Unlu ve şekerli besinlerin ortaya çıkması buna neden olmuştur. Sert besinler yumuşak besinlere göre dişi daha iyi temizlediği için diş çürüğünün meydana gelmesini engellemektedir. Karbonhidratların fazla alınması ile düş çürüğü arasında ilgi vardır. Diş; sindirim sisteminin başlangıcında; besinlerin kesilmesi, ufalanması, koparılması ve kendini destekleyen dokuların korunmasına ve gelişmesine yardımcı bir organdır. İnsanda iki tip diş sistemi vardır: Süt dişleri ve sürekli dişler. Süt dişleri, doğumdan yaklaşık 6 ay sonra görülmeye başlar. 2,5 yaşlarında ise gelişimlerini tamamlamış olurlar. 6 yaşında sürekli dişler çıkmaya başlar. Bu zamana kadar süt dişleri çiğneme işlevini tek başına yaparlar. Sürekli dişler büyük azı dişiyle ağızda görülmeye başlar ve 13 yaş civarında tümüyle süt dişlerinin yerini alır.

İncelenen materyal Avşan Kale ve Panaztepe iskeletlerindeki dişlerdir. Her iki grupta İslam Dönemi'nde yaşamışlardır. Avşan Kale Elazığ, Panaztepe ise İzmir-Menemen yakınındadır. Biri Doğu Anadolu'da, diğeri Batı Anadolu'da yer alan bu iki toplumun yakınlık derecelerine bakılmıştır. Beslenme rejimleri arasında fark olup olmadığını anlamak için patolojik analiz yapılmıştır. Dişlerin taç boyutlarının mm. Olarak ölçülmesi sonucu iki toplum birbirine morfolojik olarak yakın bulunmuştur. Çürük oranı toplam diş sayısı olarak bakıldığında Avşan Kale'de oldukça fazladır. Panaztepe'de aşınma oldukça yüksektir. Avşan Kale'de ise aşınma daha azdır. Bu sonuçlara bakarak Panaztepe bireylerinin denize yakın olmaları nedeniyle deniz ürünleriyle beslenmiş olabileceklerini söyleyebiliriz. Avşan Kale toplumunda ise çürüğün fazla olması onların tek yönlü beslenmelerinin göstergesi olabilir. Muhtemelen fakir bir toplumdur Avşan Kale. Ölümden önce diş kaybı her iki toplumda da görülmektedir. Ölümden sonra diş kaybı da her iki toplumda oldukça fazladır. Avşan Kale ve Panaztepe'de diş taşı fazla ilerlemiş oranda değildir.

Sonuç olarak bakıldığında, yaklaşık aynı dönemde yaşamış olan bu iki toplumun yaşadıkları ekolojik çevreye bağımlı olarak diş patolojilerinin farklı olduklarını görürüz. Bu da bulundukları ekolojik ortama bağlı beslenme düzenleriyle ilgilidir.

Özer, İsmail: "Orta Anadolu (Ankara Çevresi) Neojen Devir Karasal Memeli Fosil Yatakları Kataloğu ve Paleoekolojisi", Yüksek Lisans Tezi, (Danışman: Prof. Dr. Erksin Güleç), 235 s.

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ISLAMIC
MATHEMATICS
AND
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Volume
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منشورات
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الرياضيات الإسلامية والفـلك الإسلامـي

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جوامع علم النجوم وأصول الحركات السماوية
لأحمد بن محمد بن كثير الفرغاني

القسم ١

نشر وترجمة لاتينية
ليعقوب جوليوس

١٤١٨هـ - ١٩٩٧م
معهد تاريخ العلوم العربية والإسلامية
في إطار جامعة فرانكفورت - جمهورية ألمانيا الاتحادية

الرياضيات الإسلامية والفـلك الإسلامـي

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جوامع علم النجوم وأصول الحركات السماوية
لأحمد بن محمد بن كثير الفرغاني
(توفي ٢٣٥هـ)

القسم ١

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ليعقوب جوليوس

١٤١٨هـ - ١٩٩٧م
معهد تاريخ العلوم العربية والإسلامية
في إطار جامعة فرانكفورت - جمهورية ألمانيا الاتحادية

FERGÂNÎ'NİN "*ASTRONOMİNİN ÖZETİ VE GÖĞÜN HAREKETLERİNİN ESASLARI*" ADLI ASTRONOMİ ESERİ

Yavuz UNAT[1]

Al-Farghânî, known as Alfraganus in the West, was the one of the famous astronomers who had worked in Memûn's dynasty. *Elements of Astronomy*, which had written by Alfraganus about 833 AD, was the most popular book in astronomy until the fifteenth century in the West and in the East as well, and had been used as a handbook in astronomy. *Elements of Astronomy* was about celestial motions and included a complete study on the science of the stars. And it was a summary of Ptolemy's *Almagest*. This book was translated into Latin in twelfth century and exerted a great influence upon European astronomy before Regiomontanus. This work indicates the reason why *Elements of Astronomy* had immensely influenced the Western astronomy as well as the Eastern astronomy for a long time.

Türkistan'ın Fergana bölgesinden bir Türk olan ve batıda Alfraganus adı ile tanınan Fergânî, astronomi alanında, İslâm dünyasına olduğu kadar Batı dünyasına da büyük etkisi ile tanınmaktadır. Astronomiye ilişkin yazmış olduğu *Astronominin Özeti ve Göğün Hareketlerinin Esasları* (*Cevâmi' 'İlm el-Nucûm ve Usûl el-Harekât el-Semâvîye*) - diğer adı ile *Mecistî'ye Giriş Bölümleri Kitabı* (*Kitâb el-Fusûl el-Mudhal fî Mecistî*) veya batıda tanınan adı ile *Elements of Astronomy* (*Astronominin Unsurları*) - adlı kitabı, onbeşinci yüzyıla kadar, doğu ve batıda astronomi alanında bir başvuru kitabı olarak kullanılmış ve defalarca Latinceye çevrilmiştir.

1 A.Ü. Dil ve Tarih Coğrafya Fakültesi, Bilim Tarihi Anabilim Dalı Araştırma Görevlisi.

منشورات
معهد تاريخ العلوم العربية والإسلامية

يصدرها
فـؤاد سـزكين

الرياضيات الإسلامية والفـلك الإسلامـي

١٠

جوامع علم النجوم وأصول الحركات السماوية
لأحمد بن محمد بن كثير الفرغاني

القسم ٢

شرح وتعليق
يعقوب جوليوس

١٤١٨هـ - ١٩٩٧م
معهد تاريخ العلوم العربية والإسلامية
في إطار جامعة فرانكفورت - جمهورية ألمانيا الاتحادية

الرياضيات الإسلامية والفـلك الإسلامـي

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معهد تاريخ العلوم العربية والإسلامية
في إطار جامعة فرانكفورت - جمهورية ألمانيا الاتحادية

A Doctorate Dissertation on :

" K. Gawamiᶜ ᶜilm an-nugum wa-usul al-harakat as-Samawiya "

by al-Faraghani

Mr. Mohammad Lu'aye Bilal registered for his Doctorate dissertation in the History of Applied Sciences in the I. H. A. S. - Aleppo University, under the supervision of Dr. Sami Chalhoub. The dissertation is entitled:

" K. Gawamiᶜ ᶜilm an-nugum wa-usul al-harakat as-samawiya" by Ibn Kathīr al-Faraghani.

A Doctorate Disseration on

" The Theory of Vision from Iqlīdis Till at Farisī "

Mrs. Bouthaina Jalkhī registered for her Doctorate thesis in the History of Eaxt Science in the I. H. A. S. – Aleppo University under the supervision of Prof. Dr. Sami Chalhcub, with the participation of Prof. Dr. Naš'at Hamarneh.

The dissertation is entitled:

" Theory of Vision from Iqlīdis Till al-Farisī ".

Prof. Dr. Fu'ad Sezgin granting I. H. A. S. a Valuable Collection of the I. H. A. I. S. publications

Prof. Dr. Fu'ad Sezgin, Director Institute for the History of Arabic and Isamic Science-Frankfurt, Germany. - grants the I. H. A. S. a valuable collection of his institute publication.

All the (336) books deal with the History of Arabic and Islamic Sciences.

The administration of the I. H. A. S. thanks Prof. Dr. Fu'ad Sezgin for his generosity and wishes him good health that enables him to continue his career, and wishes the I. H. A. I. S. in Frankfurt more development and florescence.

Cultural Lectures at the I. H. A. S.

Institute for the History of Arabic Science in collaboration with hte Syrian Society of the History of Science held a number of cultural lectures as follows:

- On 26 – 9 – 1995 Mr. Soubhi Sakkar presented a lecture on the History of Sundials, Aleppo Sundials, as samples.
- On 14 – 11 – 1995 Miss Bagdad Abdul Mounᶜem presented a lecture on Shedding Light on the Engineering Idioms in the Arabic History.
- On 12 – 12 – 1995 Dr. Mohammad Badr al -Din Zaitouni presented a lecture on Old Medicine in the Arab Homeland and Its Effect on the whole World.

Renewing the Administration of the I. H. A. S.

Prof. Dr. Salha Sankar- Minister of Higher Education- issued resolution no 948 dated 3–9–1995, including the renewal and appointment of the administrations of the faculties and the I. H. A. S. , for the period between 1 – 9 – 1995 – 31 – 8 – 97).

The administration of the I. H. A. S. is formed of:

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Institute for the History of Arabic Science
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Edited by Şinasi Tekin & Gönül Alpay Tekin

ISLAMIC SOURCES III

EL-FERGÂNÎ

THE ELEMENTS OF ASTRONOMY

Textual Analysis, Translation, Critical Edition and Facsimile

by Yavuz UNAT

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1998

DOĞU DİLLERİ VE EDEBİYATLARININ KAYNAKLARI

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Yayınlayanlar

Şinasi Tekin . Gönül Alpay Tekin

İSLÂMÎ KAYNAKLAR III

EL-FERGÂNÎ

ASTRONOMİNİN ÖZETİ VE GÖĞÜN HAREKETLERİNİN ESASLARI

İnceleme, Tercüme, Tenkidli Metin ve Tıpkıbasım

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Yakındoğu Dilleri ve Medeniyetleri Bölümü
1998

Nesil, yıl:3/sayı:1 EKİM 1978, S.40-45.

IX. yüzyılda
bir Türk Astronomu

Ahmed Fargânî

Prof. Dr. M. Kemal ÖZERGİN
İstanbul Yüksek İslâm Enstitüsü
Öğretim üyesi

Batı Türkistan'ın yetiştirdiği büyük bilginlerden Ahmed Fargânî (İbn Kesîr Fargânî), yalnız yaşadığı IX. yüzyılın değil, sonraki çağların da değerli bir astronomu, matematikçisi ve coğrafyacısıdır. Bu alanlardaki araştırmalarıyla bilim dünyasına kazandırdığı eserler ve yaptığı ölçme âleti, onun adını dünya bilimler tarihine yerleştirmiştir. Eserleri insanlığın gelişmesine olduğu kadar, yetişmesine de hizmet etti. Avrupa'nın Ortaçağ bilim dünyasında, XII. yüzyıldan beri «Alfraganus» adıyla ün kazanmıştı. Soyca Türkistanlı olduğu halde onun, son yıllardaki bazı araştırmalarda bile, «bir Arap astronomu ve matematikçisi» diye tanıtılması yanlıştır.

HAYATI:

Fargânalı bilgin Ahmed'in hayatı hakkında elimizde fazla bilgi yoktur. Onu tanıtan eski kaynaklar ancak ertesi yüzyıllardandır. X. yüzyıldan İbn en-Nedîm (987), XI. yüzyıldan İbn Sâ'id, XIII. yüzyıldan İbn el-Kıftî, İbn el-'İbrî, İbn Ebî Usaybi'a ve XV. yüzyıldan Ebû'l-Mahâsin'in eserlerindeki bu bilgiler de pek yetersizdir.

Eserlerine ve eski kaynaklara göre Fargânalı bilginin tam adı «Ebû'l-Abbâs Ahmed el-Fargânî»dir. Eski eserlerde kısaca «İbn Kesîr el-Fargânî» diye de anılır. Nisbesi onun, Batı Türkistan'ın adını yetiştirdiği bilginlerle duyurmuş Fargânî bölgesinden olduğunu açıkça gösterir. Uzakta kalan soyu ve âilesi hakkında eski kaynaklarda bilgi bulunmuyor. Yine onlarda Ahmed Fargânî'nin baba ve dedesi ile ilgili bilgiler de karıştırılmışdır. İbn en-Nedîm, onun adını «Muhammed» diye yazar. Bu husus belki istinsahdan gelen bir yanlıştır. İbn el-Kıftî de, babasını «Muhammed» ve dedesini «Kesîr» olarak verir. İbn en-Nedîm, İbn el-İbrî, İbn Ebî Usaybi'a ve Ebû'l-Mahâsin ise, «Kesîr»i doğrudan babası diye kaydetmişlerdir. İbn el-Kıftî'deki bilgi doğru ise, babası da bir astronomi bilgini idi.

Dokuzuncu yüzyılda yaşamış Ahmed Fargânî'nin doğduğu ve öldüğü yıllar da tesbit edilmemiştir. Bununla birlikte bu yüzyılın başlarında dünyaya geldiği ve 861 yılından az sonra öldüğü anlaşılıyor. Fargânî'nin hangi kentinden olduğu da bilinmeyen Ahmed Fargânî, büyük ihtimalle çağın kültür merkezlerine sahip yurdunda öğrenim gördü. Onun bu bölgeden çıkıp Bağdad'a nasıl, ne zaman ve niçin gittiği de bilinmiyor Ancak pek çok Türkistanlı bilginin o yüzyıllarda, İslâm dünyasının devlet ve bilim merkezi halinde yükselen Halifelik başkenti Bağdad'a geçtiğini görüyoruz.

Bağdad'da kendini tanıtan Fargânalı bilgin, astronomi ve matematik alanlarındaki bilgisini bilim çevresine kabul ettirdi. Böylece ömrünün belki yarısını Elcezire'de geçirdi. Abbâsî halifeleri el-Me'mûn, el-Mû'tasım el-Vâsık ve el-Mütevekkil çağlarında (813 - 861) mühim araştırmalar yaptı ve kitaplar yazdı.

Nitekim eski kaynaklar onu, bu yılların ileri gelen astronomları (Müneccim, Hey'etci) arasında anarlar. Halife el-Mütevekkil (847 - 861), artık alanında yüksek bir bilgin olan Ahmed Fargânî'yi 861 (247) yılında, Nil kıyısında kurulan bir Mıkyâs'ın yapımına nezâret etmesi için Fustât (Mısır)'a göndermiştir. (İbn Ebî Usaybi'a ve Ebû'l-Mahâsin). Hakkında o yıldan sonra haber bulunmadığına bakılarak, artık öldüğü sanılıyor. Ölüm yeri de bilinmeyen Ahmed Fargânî için İbn en-Nedîm onun, erdemli bir kişi olduğunu ve çalıştığı bilim kolunun öncülerinden sayıldığını belirtir. Adındaki Ebû'l-Abbâs künyesi, onun «Abbâs» adında bir oğlu bulunduğuna işaret ediyor olabilir.

ÇAĞI BİLİM HAREKETLERİNDE BAĞDAD

İslâm dünyasının siyasî otoritesi Abbâsî Halifeliği, VIII. yüzyılın ikinci yarısında, başta eski greklerden olmak üzere, ilkçağ bilim eserlerine ve onların arapçaya çevrilmesine büyük ilgi göstermeye başlamıştı. Halife Hârun er-Reşîd (786 - 809) ve oğlu Halife el-Me'mûn (813 - 833)'un hükümdarlıkları sırasındaki ilgileri, bu çalışmalarda mühim adımlar atılmasını ve pek yararlı ürünler alınmasını sağladı. Özellikle Halife el-Me'mûn Bağdad'da «Beyt el-Hikme» adı verilen bir Bilim Evi kurdurmuştu. Onun yanında ayrıca «Hizânet el-Kütüb el-Hikme» denilen büyük bir kütüphane de meydana getirildi. Bu bilim merkezinde çeşitli bilim kollarından birçok bilgin ve çeviriciler toplandı. Böylece o yıllardan başlayarak Bağdad kenti, öncelikle eski bilim eserlerini arap diline çevirme yolundaki çalışmaların merkezi durumuna yükseldi. Yabancı dillerden çeviri işlerine ülkenin birçok yöresinden çeşitli kişiler katılıyordu. Arapçaya çevrilen ilk eserler arasında İlkçağın değerli bilgini İskenderiyeli Claudius Ptolemaios (Batlamyûs, II. yy.)'un «Megiste süntaksis (el-Macisti)» adlı astronomi kitabı da vardır. Bağdad'da girişilen bu çeviri ve az sonra bilim çalışmalarında, IX. yüzyılda Batı Türkistan'dan başta Abdülhamid İbn Türk, Muhammed Hârezmî, Ahmed Fargânî, Abbâs İbn Sa'id Cevherî, Ahmed İbn Abdullah Merwezî... olmak üzre değerli bilginler de bulundu.

Yine bu Halife el-Me'mûn çağı sonlarında iki ayrı rasad-hâne de kuruldu. Onlardan biri Bağdad'da Şemmâsiye denilen semtte, öteki ise Dımaşk yakınındaki Kaasiyûn adlı dağda yapılmıştı. Bu gözlemevlerinin kurulmasında, Halifelik hizmetinde bulunan yüksek bilginler arasındaki A. Fargânî'nin de yer alarak katkılarda bulunduğu muhakkak sayılabilir. İki gözlemevinin astronomları, önce ünlü bilgin Ptolemaious'un «el-Macistî (Almagest)» adlı, o çağlarda pek tutulan eserini ele aldılar. Bu Yıldızlar Cedveli'ndeki bilgiler dikkatle inceleniyor, yeni gözlemlerle gözden geçiriliyordu. Nitekim kısa sürede bu araştırmaların ürünleri alındı. Halife el-Me'mûn çağı bilginleri coğrafya koordinatları üzerinde çalışarak, meridiyen'in bir derecesi ölçülüp tesbit edildi. 829 yılında Bağdad'da ve 832 yılında Dımaşk'da başlayan gökyüzü gözlemleri sonunda da mükemmel bilgiler elde edildi. Özellikle bu alanda olgunlaştırılmış, bilgiler, «ez-Zîc el-Me'mûn el-Mumtahana (el-Me'mûn'un denen-

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AL-FARGHĀNĪ Al-Farghānī, Abu-l-ʿAbbas Aḥmad ibn Muḥammad ibn Kathīr was born in Farghana, Transoxania and died in Egypt, ca. 850. He was a famous astronomer during the time of the ʿAbbasid caliph al-Maʾmūn and a contemporary of al-Khwārizmī, al-Marwarudhī, al-Jawharī, and Yaḥya ibn Abi-Manṣūr. He was well known in the Latin Middle Ages under the name of Alfraganus, thanks principally to his widely read book, *Compilatio astronomica* (also called *Liber 30 differentiarum*, Book of the 30 Chapters), which is a summary of Ptolemy's *Almagest*. The work still survives in Arabic under the following titles: *Jawāmiʿ ʿilm al-nujūm wa'l-ḥarakāt al-samāwiyya, Uṣūl ʿilm al-nujūm, ʿIlal al-aflāk*, and *Kitāb al-fuṣūl al-thalāthīn*. The *Jawāmiʿ* (sometimes translated as *Elements*) provided the medieval reader with a rather comprehensive account of Ptolemy's astronomy through a well-organized, accessible, and non-mathematical presentation. The work was translated into Latin at least twice in the twelfth century: by John of Spain (John of Seville) in 1135, and by Gerard of Cremona before 1175. The *Jawāmiʿ* was also translated into Hebrew during the thirteenth century by Jacob Anatoli. Copies of this translation exist today in Berlin, Munich, Vienna, and Oxford, among other places. In 1590, drawing from Anatoli's translation, Jacob Christmann published the third Latin version of the book in Frankfurt-am-Main. A later Latin translation of the text, along with al-Farghānī's original Arabic, was published in 1669 by Jacob Golius. Widely circulated in the West during the Middle Ages, the *Jawāmiʿ* was frequently referenced by medieval writers, and it is generally accredited today for having contributed considerably to the propagation of knowledge on the Ptolemaic system. In addition to the *Jawāmiʿ*, al-Farghānī wrote on the astrolabe. A number of his manuscripts on the subject survive under the following titles: *Fī ṣanʿ at al-asṭurlāb, al-Kāmil fi'l-asṭurlāb*, and *Kitāb ʿamal al-asṭurlāb*.

AHMED BOUZID

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See also: Astrolabe – *Almagest*

AL-FAZĀRĪ Abū Isḥāq Ibrāhīm ibn Ḥabīb ibn Sulaymān ibn Samura ibn Jundab al-Fazārī (d. ca. 777) was a Muslim astronomer and the first Muslim constructor of astrolabes. He was the author of many scientific works whose manuscripts are not extant, but the Arabic historians Abū'l-Faraj Muḥammad ibn Nadīm al-Warrāq al-Baghdādī (d. 993) in his *Kitāb al-fihrist al-ʿulūm* (Bibliography of Sciences) and Jamāl al-Dīn ʿAlī ibn al-Qifṭī (1173–1248) in his *Taʾrīkh al-ḥukamā* (History of Sages) mention one mathematical and five astronomical works by al-Fazārī:

(1) *Kitāb fī tasṭīḥ al-kura* (Book on the Projection of a Sphere onto a Plane),

(2) *al-Zīj ʿalā sinī al-ʿarab* (Astronomical Tables According to Arabic Years),

(3) *Kitāb al-ʿamal bi'l-asṭurlāb al-musaṭṭaḥ* (Book on the Use of the Plane Astrolabe),

(4) *Kitāb al-ʿamal bi'l-asṭurlābāt dhawāt al-ḥalaq* (Book on the Use of Astrolabes with Rings),

(5) *Kitāb al-miqyās li'l-zawāl* (Book on the Gnomon for the Noon), and

(6) *Qaṣīda fī ʿilm al-nujūm* (Poem on the Science of Stars).

His son Muḥammad translated an astronomical work *Brāhma-sphuṭasiddhānta* by the sixth century Indian astronomer and mathematician Brahmagupta from Sanskrit into Arabic. The Arabic name of this work, *Sindhind*, came from the word *siddhānta*, astronomical texts, and the Arabic name for India, *Hind*. The extant fragments of *Sindhind* have been translated into English by David Pingree.

BORIS ROSENFELD

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"El-Ferganî, Astronominin Özeti ve Göğün Hareketlerinin Esasları"

Yavuz Unat, **El- Ferganî, Astronominin Özeti ve Göğün Hareketlerinin Esasları,** (İnceleme, Tercüme, Tenkidli Metin ve Tıpkı Basım), Harvard Üniversitesi Yakın Doğu Dilleri ve Medeniyetleri Bölümü, 1998, 286 sayfa.

Güçmurat SOLTANMURADOV
AÜ DTCF Felsefe Bölümü Doktora Öğrencisi

Bilimsel astronominin kökleri tâ Mezopotamya'ya, yani Türkler ile akraba sayılan Sumerlilere kadar geriye gitmektedir. Gök yüzünü tanrılar ile meskûn bir nizâm-ı âlem olarak gören bu Asya kavimi (Sumerliler) gökteki nizâmın aynen yere yansımakta olduğuna inanmış, varlığı nizâma, adalete ve dengeye dayandırmıştır.

Eski Mezopotamya astronomisi çok erken tarihlerden itibaren eski Yunan astronomisini etkilemiştir. Örneğin: Mezopotamya'daki gnomon, polos ve su saati gibi rasat âletleri İyonya üzerinden eski Yunan'a ulaşmıştır. Eski Yunanlılardaki teogoni, kosmogoni ve kaos fikri de Mezopotamya'dan gelmektedir. Ayrıca Mezopotamya'daki aritmetik ve cebire dayalı bir astronominin eski Yunan'da geometriye dayalı astronomiye dönüştürüldüğü de bilinmektedir.

Mezopotamya astronomisinin eski Yunan'dan Ortaçağ İslâm Dünyası üzerine etkisi "Almagest"in Arapçaya kazandırılması ile başlamıştır. Tanıtmaya çalıştığımız eser Arapça çevirisi ile Ortaçağ İslâm Dünyası astronomi çalışmalarında Yunan etkisine ağırlık kazandıran *Almagest*'in Ferganî tarafından yapılmış özetidir. Daha doğrusu tâdil edilmiş şeklidir.

Eser Yavuz Unat tarafından doktora tezi olarak hazırlanmış ve Şinasi Tekin ile Gönül Alpay Tekin editörlüğünde Harvard Üniversitesi Yakın Doğu Dilleri ve Medeniyetleri Bölümü'nde kitap hâlinde basılmıştır.

Önsöz, Giriş, "A. El-Ferganî'nin Yaşadığı Dönemde İslâm Dünyasının Genel Görünümü", "B. Ebû el-Abbas Ahmed b. Muhammed b. Kesir el-Ferganî; 1. Hayatı 2. Eserleri", "C. El-Ferganî'nin Astronominin Özeti ve Göğün Hareketlerinin Esasları Adlı Eseri, 1. Eserin Nüshaları 2. Eserin Çevirileri 3. Eserin İçeriği", Sonuç, "Ek-1 El-Ferganî'nin Sözünü Ettiği Şehirler ve Enlemleri", "Ek-2 Kullanılan Semboller", Kaynakça, İndeks, Şekiller, "Astronominin Özeti ve Göğün Hareketlerinin Esasları (Cevami 'İlm el-Nücum ve Usûl el-Harekât el-Samaviyye) Şekiller," Edisyon, Tıpkıbasım gibi kısımlar kitabın içeriğini oluşturmuştur.

Yazar, Önsöz kısmında kitabının amacının 9. yy. Türk astronomu Ferganî'nin astronomi eserinin ayrıntılı olarak incelenmesinden ve bilim tarihindeki öneminin belirlenmesinden ibaret olduğunu vurguladıktan sonra, çalışmasına katkıda bulunan muhterem hocalarımız Prof. Dr. Sevim Tekeli'ye, Prof. Dr. Esin Kâhya'ya, eşi Cemile Buzoğlu'na ve meslektaşlarına şükranlarını sunar.

Eserin Giriş kısmında yazar, Ferganî'nın astronomi çalışmasının Batı Dünyası üzerindeki etkisinden söz eder. Ona göre, eserin 833 yıllarında (veya 857 yıllarından önce) yazıldığı sanılmaktadır. Batlamyus'un *Almagest*'inin özeti olarak kabul edilmektedir. Eser birçok kez Latinceye ve İbraniceye çevrilmiştir; onikinci yüzyılın ilk yarısından onbeşinci yüzyılın sonuna değin Avrupa astronomisinin gelişimini yoğun bir biçimde etkilemiştir.

Ferganî'nın kitabının Batı astronomisinin gelişimi üzerindeki etkisi, Fransız bilim tarihçisi Pierre Duhem (1861-1916) tarafından *"Le Systeme du monde"* adlı eserinin üçüncü ve dördüncü ciltlerinde çok açık bir şekilde verilmiştir.

13. yy. matematikçisi ve astronomu Sacrobosco Ristorgo d'Arezzo, 13. yüzyılda yaşamış ansiklopedist Gershon ben Solomon, İtalyan astroloğu Guido Banatti, 13. yy. fizikçisi ve astronomu William the Englishman, 13. yy. filozofu ve bilim adamı Roger Bacon, ünlü İtalyan şâiri Dante Alighieri (1261-1321) ve oğlu Jacopo di Dante Alighieri, Rönesans bilgini Regiomontonus çalışmalarında Ferganî'den yararlanmıştır.

GESCHICHTE DES ARABISCHEN SCHRIFTTUMS

BAND XIII

MATHEMATISCHE GEOGRAPHIE UND KARTOGRAPHIE IM ISLAM UND IHR FORTLEBEN IM ABENDLAND

AUTOREN

VON

FUAT SEZGIN

- Harita
- Ibn Hawqal Ṣūra
- İdrisī
- Cihannüma
- Fezari Muh. b İbr.
- Yakub b. Tarik
- Harizmi Muh. b. Musa
- Harizmi Muh. b. Ahm.
- Mâşâallah b. Eseri
- Fergani
- Kindi Ya'kubi İshak
- Habeş el-Hasib

2007

Institut für Geschichte der Arabisch-Islamischen Wissenschaften
an der Johann Wolfgang Goethe-Universität
Frankfurt am Main

INHALTSVERZEICHNIS

13

Fergānī, Ebū Mansūr Ahmed b. Abdillāh b. Ahmed. (v. 398/1007). (ITM)

EI, II, 793.
Zirikli, I, 149.

Fergānī, Ebū Muh. Abdullah b. Ahmed b. Cafer. (v. 362/972).

EI, II, 793. (ITM)
MLF, VI, 22-23

~~al-Farghānī~~

1276- Brockelmann, C., *Gesch. der arabischen Lit.*, 1: 221; Supplementband, 1: 392-3.

1277- Leclerc, L., *Hist. de la méd. arabe*, 2: 508-9.

1278- Nasr, S.H., *Sci. and civilization in Islam*: 169, 182-3.

1279- Sarton, G., *Introd. to the hist. of sci.*, 1: 546, 567.

1280- Suter, H. and Vernet, J., "al-Farghānī", *EI*^{2}, 2: 793.

1281- Suter, H., "al-Farghānī", *EI*^{1}, 2: 66-7.

1282- Suter, H., *Die Math. und Astronomen der Araber*, 1900: 18: Nachträge, 1902: 160.

Fergâni, Ebü'l-Abbas Ahmed b. Muh. b. Kesir el-Fergâni (i.A. 4-5/9-10. bak.)

FARGHĀNĪ al-, abu-al-ᶜABBĀS AHMAD, (named Alfraganus by his Latin translators) an Arabic astronomer and astrologer of the IXth century. Born in Farghānah (Transoxiania), he was summoned by Caliph Mutawakkil (847-861) to Cairo, where he directed the construction of a Nilometer. His main work on astronomy *al-Mudkhil ila ᶜIlm Hay'at al-Aflāk*, translated into Hebrew and Latin in the XIIth century, circulated in many manuscripts. It was repeatedly reprinted and was among the most widely spread works of Arabic scholars.

RONART, Stephen and Nandy GEAC s 162 1979 (Amsterdam)

7

-Fergani Ahm. b. Muh.
-Mazallah

0334 Māshā'allāh and al-Farghānī : their works in Western translations : texts and studies / collected and reprinted by Fuat Sezgin ; in collaboration with Carl Ehrig-Eggert, Eckhard Neubauer. - Frankfurt am Main : Institute for the History of Arabic-Islamic Science at the Johann Wolfgang Goethe University, 2006. - [I], 397 p. ; 25 cm. - (Historiography and classification of science in Islam, ISSN 1860-7063 ; v. 41) (Publications of the Institute for the History of Arabic-Islamic Science)
Textos en inglés e italiano. - Port. adicional en árabe. - Tít. de la port. adicional: Aʿmāl Māšā'allāh wa-l-Farġānī wa-tarğamātu-hā fī l-ġarb. - Reproducción de artículos de los siglos XIX y XX
ISBN 3-8298-9050-8
1. Māšā'allāh - Estudios y conferencias 2. Al-Farġānī, Aḥmad b. Muḥammad - Estudios y conferencias I. Sezgin, Fuat II. Título. III. Título: Aʿmāl Māšā'allāh wa-l-Farġānī wa-tarğamātu-hā fī l-ġarb IV. Serie. V. Serie: Publications of the Institute for the History of Arabic-Islamic Science
001(08)
ICMA 4-53585 R. 59340

F3

al-Farghānī

1276- Brockelmann, C., *Gesch. der arabischen Lit.*, 1: 221; Supplementband, 1: 392-3.

1277- Leclerc, L., *Hist. de la méd. arabe*, 2: 508-9.

1278- Nasr, S.H., *Sci. and civilization in Islam*: 169, 182-3.

1279- Sarton, G., *Introd. to the hist. of sci.*, 1: 546, 567.

1280- Suter, H. and Vernet, J., "al-Farghānī", *EI*^{2}, 2: 793.

1281- Suter, H., "al-Farghānī", *EI*^{1}, 2: 66-7.

1282- Suter, H., *Die Math. und Astronomen der Araber*, 1900: 18: Nachträge, 1902: 160.

Fergāni, Ebū Mansūr Ahmed b. Abdillāh b. Ahmed. (v. 398/1007). (ITM)
EI, II, 793.
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Fergāni, Ebū Muh. Abdullah b. Ahmed b. Cafer. (v. 362/972). (ITM)
EI, II, 793.
MLF, VI, 22-23

٤٨٤ ـ رسالة في معرفة الأوقات التي يكون القمر فيها فوق الأرض أو تحتها ★

FERGÂNÎ

لأحمد بن محمد بن كثير الفرغاني (كان حياً قبل ٢١٨ هـ) .

منها نسخة في المكتبة الخديوية بمصر ، ضمن مجموع ، رقم (١٩٤ / ٨٠٣٤) منسوخة سنة ٨٧٦ هـ [1] .

(١) فهرست الكتب العربية المحفوظة بالكتبخانة الخديوية المصرية ٥ : ٣١١ .

Fergani

0680 – أحمد بن محمد بن كثير بن عبد الجليل أبو العباس الفرغاني الفلكي المهندس المعروف بالفرغاني – أحد منجمي المأمون العباسي – كان حيا سنة 827/212

(أنظر : كحالة معجم المؤلفين 145/2 ؛ إبن أبي أصيبعة عيون الأنباء 286-287)

من تصانيفه :

1 – تجريد الكامل في صنعة الأسطرلاب – في الهيئة خراججي أوغلي رقم 4/1177 ورقة 37-48 ، لم يعلم المجرد ؛

2 – تركيب الأفلاك – في الهيئة معلم جودت 5/163 ورقة 28-34 ، 1203 هـ

3 – جوامع علم النجوم وأصول الحركات السماوية = المدخل إلى علم هيئة الأفلاك وحركة النجوم جار الله أفندي 1279 ورقة 383-392 ، 882 هـ

4 – الكامل في صنعة الأسطرلاب الشمالي والجنوبي وعللهما بالهندسة والحساب قسطموني رقم 5/794 ورقة 40 ؛

5 – كتاب السياسة في تدبير الرياسة آياصوفيا مجموعة رقم 1/2843 ؛

٢٦١ - (١) - كتاب في أصول علم النجوم ★

FERGÂNÎ

لأحمد بن محمد بن كثير الفرغاني (كان حياً قبل ٢١٨ هـ) .

منه صورة محفوظة في معهد المخطوطات العربية بجامعة الدول العربية في القاهرة ، رقم (ف ١٠٥٨) في (٧٨) ورقة ، منسوخة سنة ١٣٢٩ هـ ، عن الأصل المحفوظ في دار الكتب المصرية ، رقم (٩٤٤ / ميقات) (٢) .

٢٦٢ - (٢) - تركيب الأفلاك ★

منه نسخة في مكتبة الأوقاف العامة في بغداد ، رقم (٥٤٩٧) في (٤٨) ورقة ، منسوخة سنة ٧٣٣ هـ (٣) .

(٢) فهرس المخطوطات العربية بمعهد المخطوطات العربية - القاهرة ٣ : ١٠ .

(٣) فهرس المخطوطات العربية في مكتبة الأوقاف العامة في بغداد ٤ : ١٢٦ ، وقد تصحف اسم المؤلف في الفهرس إلى : « أحمد بن محمد بن عبد الجليل الفرغاني » والراجح ماهو مثبت ، انظر : تاريخ الحكماء للقفطي ص : ٧٨ ، ومعجم المؤلفين لكحالة ٢ : ١٤٥ .

AL-DĪNAWARĪ

See Section VIII in next chapter.

AL-FARGHĀNĪ

In Latin: Alfraganus. Abū-l-'Abbās Aḥmad ibn Muḥammad ibn Kathīr al-Farghānī. Born in Farghānā, Transoxiana, flourished under al-Ma'mūn, was still living in 861. One of the greatest astronomers employed by al-Ma'mūn and his successors. He wrote "Elements of Astronomy" ("Kitāb fī ḥarakāt al-samāwīya wa jawāmi' 'ilm al-nujūm", book on celestial motions and the complete science of the stars), which were translated into Latin in the twelfth century and exerted a great influence upon European astronomy before Regiomontanus. He accepted Ptolemy's theory and value of the precession, but thought that it affected not simply the stars, but also the planets. Diameter of the earth: 6,500 miles. Determination of the greatest distances and of the diameters of the planets. In 861 he superintended the erection of a nilometer* in Fusṭāṭ.

Text and Translations—The Elements of Astronomy (this book bears various other titles) was translated into Latin by John Hispalensis and Gherardo Cremonese and into Hebrew by Jacob Anatoli. Hispalensis's translation, Compilatio astronomica, was first printed in Ferrara (1493). Then again edited by Melanchthon from Regiomontanus's papers in Nürnberg, 1537, and again in Paris (1546). Anatoli's version was translated into Latin by Jacob Christmann (Frankfurt, 1590).

Editio princeps of the Arabic text (with Latin translation) by Jacob Golius: Muhammedis fil. Ketiri Ferganensis qui vulgo Alfraganus dicitur Elementa Astronomica, arabice et latine (Amsterdam, 1669).

Two works on the astrolabe are still unpublished.

Criticism—Fihrist (I, 279, commentary, p. 132). H. Suter: Die Mathematiker und Astronomen der Araber (p. 18, 1900; Nachträge, p. 160, 1902); Encyclopaedia of Islam (vol. 2, 66, 1914). P. Duhem: Système du Monde (vol. 2, 204–214, 1914. Discussing Alfraganus's views on precession). E. Wiedemann: Einleitungen zu arabischen astronomischen Werken (Das Weltall, 20. J., 21–26, 1919. The first chapter of this series, for which see Isis, IV, 432, contains an annotated translation of Alfraganus's introduction to a book on the astrolabe; Berlin MS.). E. Wiedemann und Josef Frank: Zirkel zur Bestimmung der Gebetszeiten (Sitzungsber. der physik. mediz. Sozietät in Erlangen, vol. 52, 122–125, 1922; Isis, V, 495). Gaston Wiet: Une restauration du nilomètre de l'ile de Rawda sous Mutawakkil (247/861) (C. R. d l'Acad. des Inscriptions, 202–206, 1924).

Influence of al-Farghānī—Paget Toynbee: Dante's obligations to Alfraganus in the Vita nuova and Convivio (Romania, 413–432, 1895). Romeo Campani: Alfragano. Il "Libro dell' aggregazione delle stelle" (Dante, Convivio, II, VI–134, secondo il codice Mediceo-Laurenziano pl. 29, cod. 9). (Collezione di opuscoli danteschi, vol. 87–90, 175 p., Firenze, 1910).

'UMAR IBN AL-FARRUKHĀN

Abū Ḥafṣ 'Umar ibn al-Farrukhān al-Ṭabarī. From Ṭabaristān, flourished in Bagdad, died c. 815. Muslim astronomer and architect. He translated various books from Persian into Arabic, some of them by order of al-Ma'mūn, and wrote on astrological and astronomical subjects (e. g., a commentary on the Quadripartitum translated by al-Baṭrīq).

* The Fihrist ascribes to him a book on the construction of rukhāmāt, which, I imagine, means sundials. Also an abstract of the "Almagest." (D. B. M.)